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Early Tin in the Aegean

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IT has been seen how tin evidently came to be known at Byblos (Gebeil) through the occurrence of its ore in the two rivers near that city. It has also been seen that its presence there mixed with copper ore led on naturally to the manufacture of bronze, which became known to the Egyptians as 'Asiatic copper'*. Now we may turn to the state of affairs far away to the north and west where conditions prove to have been totally different from those obtaining on the coast of central Syria.

At Thermi on the island of Lesbos off the northwestern corner of Asia Minor at the entrance to the Dardanelles, and also close to Troy, an object has been discovered which is by far the earliest piece of tin yet known. It is a bangle of pure tin, which was found in Town IV (1), and so is dated by the finder to somewhere between 2700 and 2350 B.C. (2). It is thus some thousand years or so earlier than the pilgrim flask, which is the earliest piece of tin yet known from Egypt (3), or the representation of tin ingots in the tomb of Rekhmirê which will be discussed on pp. 100–2 *infra*.

The bangle certainly belongs to the stratum in which it was found, for it will be shown that tin was being won in the Aegean world as early as this, and that its pattern, which is that of a torque, was spreading into the Near East soon afterwards. From the Second City of Troy, and therefore of a date earlier than 2000 B.C., have come two bangles,

* In ANTIQUITY, XVII, pp. 96–8. A supplement thereto will be found in the present volume on pp. 100–1.

[1] W. Lamb, *Excavations at Thermi in Lesbos*, p. 171 and fig. 50. See also pp. 173, 215 no. 30·24. For the date see p. 211.

[2] It would have been preferable to have avoided dates in years, but we have to deal here with so many local cultural sequences that it is necessary to find some sort of common denominator which will bind them together. Except the Egyptian ones dates are still more or less in a state of flux, as new information keeps on coming to hand to define them more and more closely. Fortunately we have here only to speak of them in round numbers and for the present purposes they show the periods accurately enough.

[3] Wainwright in ANTIQUITY, 1943, p. 96; cf. A. Lucas, *Ancient Egyptian Materials and Industries*, p. 209. The pilgrim flask is certainly later than the time of Akhenaton, for stones of his time were re-used at the burial (Ayrton, Currelly and Weigall, *Abydos*, III, p. 50, and pl. XVII, fig. 20). The flask is therefore not earlier than 1350 B.C. The finger ring, which is the other earliest example of tin, is probably of the same date (Petrie, *Illahun, Kahun and Gurob*, p. 19).

one of gold and the other of silver (4). A 'prehistoric' silver torque comes from Antiparos, one of the islands of the Aegean Sea (5). At Gaza, Petrie found a gold earring which was a torque. It came from a stratum which he equates with the time of the Twelfth Egyptian Dynasty, nowadays put as beginning about 2000 B.C. (6). There is a difference, however, between the little torque from Lesbos and these others besides the metals of which they are made. It is the method of workmanship, for, while each of these consists of a bar of square section twisted on itself, the Lesbian one is made of two separate wires twisted on each other.

Miss Lamb describes the period of Town IV at Thermi as being of the Early Bronze Age, but the tables of analyses on pp. 214, 215, show that it is actually of the Copper Age. Of the 4 objects from Town IV which have been analyzed, 2 had no tin at all. One showed 0.27% and the other 1.65%. The 2 objects from Town V, which is the next later, also showed no tin at all, as did the only object from the Middle or Late Bronze Age which has been analyzed. In the towns that preceded Town IV 10 objects contained no tin at all, 3 had minute fractions of 1%. But 1 showed 13.10%, and this was from Town I, the earliest of all, dating to a period which Miss Lamb puts to about 3000 B.C. or even earlier, p. 211. The only object from the Early Bronze Age which was tested showed 10.1%, while a hook from the Middle or Late Bronze Age had none. On the other hand the 4 from the period 1400–1200 B.C. showed 16%, 8%, 2.9% and none respectively. Thus, the tin question at Thermi is very strange. But the facts remain that not only was there a very high percentage of tin in an extremely early piece of bronze, but also, as the bangle shows, that metallic tin had been smelted at some centre away to the north of the Mediterranean well before the Bronze Age had started at Thermi. It is this latter fact, the smelting of tin as a separate metal, that interests us here (7).

Though consideration of the places whence the tin for the bangle of Thermi might have come does not supply an answer to the question, it does lead to a number of interesting results. The metal could hardly have reached Lesbos from far distant Byblos (Gebeil) on the central Syrian coast. Nor is the torque a Levantine pattern, but it is one which, later on at any rate, had a long and widespread vogue in the northern lands. Hence, we must look for the place of origin of the tin of which the torque is made in some

[4] Hubert Schmidt, *Heinrich Schliemann's Sammlung Trojanischer Altertümer*, nos. 5942, 6131, pp. 235, 245, and figured in Beilage II, facing p. 234. No. 5942 is also figured as no. 693 in H. Schliemann, *Ilios*, p. 459. For the date see *Cambridge Ancient History* I, p. 80 and Synchronistic Table, p. 659.

[5] Edgar in *The Annual of the British School at Athens*, III, pp. 49, 50, and fig. 18.

[6] Petrie, *Ancient Gaza* III, p. 7, no. 1, and pl. XIV and photograph on pl. XV. The synchronism will be found on p. 12, but Petrie's extremely early dates have not found favour. Another, pp. 7, 8, no. 13 and pls. XIV, XV, is equated with the Egyptian Sixteenth Dynasty, or, in the generally accepted scheme of dating, about 1600 B.C. The type was worn here again, but in a cheaper make, about 1450 B.C. Id. *Ancient Gaza* II, pl. III, no. 24 and p. 7. A number of torque earrings are recorded in *Ancient Gaza* IV, but no dating was possible. At 1250–1200 B.C. there are three from Enkomi which look as if they were of this cheaper sort: A. S. Murray and others, *Excavations in Cyprus*, pls. VIII, IX and pp. 43, 39. They are dated by the woman-rhyton in faience which came from the same tomb as one of them, for the date of which see note 19, *infra*.

[7] We might add that in the latter part of the Bronze Age, i.e. at some time between 1400 and 850 B.C. (Montelius in *Archaeologia*, 1908, LXI, 135, 142, 162) tin was being smelted in Cornwall. Some roughly smelted tin and a quantity of well smelted copper were found along with a piece of bronze cast off from the mould. The group was dated by a broken palstave and two fine socket-celts: Borlase in *Archaeologia*, 1886, XLIX, 181. For a description of the furnaces and methods employed in the smelting see Gowland in *Archaeologia*, 1899, LVI, 296 ff.

metallurgical centre other than Byblos. There are various possibilities (8). Whether tin exists in Asia Minor or not seems not yet decided. Some affirm that it does and others deny it. In his map Przeworski marks seven places scattered about the sub-continent where he says tin exists (9). But he has to admit that no signs of early tin mining have yet been found at any of them. Indeed he considers that the tin used in early times in Asia Minor would have been imported from elsewhere and thinks of the high Caucasus, Transcaucasia, and Persia (10). Two of the Anatolian places are in the western half of the country and so are fairly near to Lesbos. The tin deposits of Bohemia are a possible source, for at the period of the Lesbian torque, which is that of Troy II, Troy was in close connexion with the Danube (11). However, here again we have no evidence for the early smelting of tin.

On the other hand there is another source whence the tin might have come to Lesbos, and where it was being worked at the requisite time and onwards. This is on the northern shore of the Gulf of Corinth at Crisa and its later representative Cirrha which in classical days was the port of Delphi. Here the mining of tin in open casts was for long the chief industry, and relics found in these workings include a single piece of pottery of the Early Helladic Period which ends by about 2000 B.C. The settlement on the seashore also produced sherds which are probably of this date. By Middle Helladic times, *c.* 2000–1550 B.C., the mines had become fairly large and the date is supplied by some potsherds which are probably of that age. This age is plentifully represented at the settlement (12). Mr Davies naturally supposes, p. 93, that the discovery of tin could not have been very early in Early Helladic times. Hence no doubt the earliest workings belong to the period Early Helladic III, which according to the *Cambridge Ancient History* I, p. 658 began about 2400 B.C. Thus, if the Lesbian tin bangle were made at the end of the period of Town IV, i.e. 2350 B.C., it would be contemporary with this earliest phase of the workings. Hence, Crisa-Cirrha at present has the strongest claim to be the centre which supplied the tin for its manufacture. This is not to say that it did ; only analysis can decide that point.

Also there are some suggestions that the Crissean tin was perhaps being exported at about the time that the Lesbian bangle was made. In the first place legend said that the town had been founded by followers of Apollo whom the god led thither from Crete (13). What attracted them to this spot of all others ? Was it the presence of the tin ore ? Anyhow the arrival of colonists shows that the country, and no doubt its product, was well-known to the outside world in early days. Crisa's foreign connexions, however, seem likely to have stretched much further afield than Crete, for the island of Cythera lying between Crisa and Crete was much connected with the East. Its harbour was called Phoenicus and tradition gave the epithet Cytherea to the oriental goddess Aphrodite, who was born at Cyprus. But we need not rely only on names and traditions, for the island has also produced solid evidence of this connexion and moreover of its period. It is supplied by a small object which was found there bearing a cuneiform

[8] In *The Journal of Egyptian Archaeology*, 1928, XIV, 98–105, Lucas has published a survey of all those known at the time.

[9] S. Przeworski, *Die Metallindustrie Anatoliens*, p. 91.

[10] id. op. cit. 102. [11] V. Gordon Childe, *The Danube in Prehistory*, pp. 6, 32–5.

[12] Davies in *Journal of the Hellenic Society*, XLIX, 92–4. The industry continued to flourish into Late Helladic, into Mycenaean, and right on into Byzantine times. The dates are those given by H. Bossert, *The Art of Ancient Crete*, p. 10. On various pieces of evidence newly available Miss Lamb, op. cit. p. 210, would bring the end of the Early Helladic Period down to 1900 B.C.

[13] Pauly-Wissowa, *Real-Encyclopädie*, s.v. *Krisa*, cols. 1889, 1890, 1892.

inscription of a certain king Narâm-Sin son of Ibiq-Ádad. These two are now known to have been kings of Eshnunna, the modern Tell Asmar some fifty miles northeast of Baghdad. Their dynasty was subordinate to various Babylonian overlords, until at last the city was conquered by Hammurabi of the First Dynasty of Babylon itself. This Narâm-Sin was on the throne of Eshnunna about 1950 B.C. according to Weidner (**14**) or three generations earlier than this according to the excavators of the site (**15**).

The inscription from Cythera is no chance wanderer lost in the unexplored backwoods of the Wild West. As is well-known, the period round about 2000 B.C., i.e. Middle Minoan I, saw much oriental influence in the Aegean. On the road to Cythera from Mesopotamia we come to Crete, whence started the colonists of Crisa. Here in Crete for instance the use of clay tablets for writing was introduced at this time (**16**). More definite still is the presence of two cylinder seals, for they are of the workmanship which is characteristic of the First Dynasty of Babylon, i.e. round about the year 2000 B.C. (**17**). One of them was found at Platanos in the southern central part of the island and the other near Candia on the north coast, and both of them are of the Middle Minoan I Period (**18**). Further back on the road we come to Cyprus, the island whence Aphrodite came to Cythera, and here also several Mesopotamian cylinder seals of this same class and date have been found. Of these, two are from Enkomi on the east coast of the island (**19**). Others come from Larnaka, i.e. Citium, on the eastern part of the south coast, and another was bought in Cyprus and hence is of unknown provenance (**20**).

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[14] *The Journal of Hellenic Studies*, 1939, LIX, 137, 138.

[15] H. Frankfort, *Tell Asmar, Khafaje and Khorsabad*, p. 56 (Oriental Institute of the Univ. of Chicago, Oriental Institute Communications, no. 16).

[16] Sir Arthur Evans, *The Palace of Minos*, II, pp. 266, 269 note 1 and cf. I, pp. 278–80.

[17] The date 2000 is used throughout this article as that of the First Dynasty of Babylon, for it is that which was accepted at the time that nearly all the various studies quoted were made. It should be pointed out, however, that recently Sidney Smith in *Alalakh and Chronology* (1940), p. 29, has brought evidence to place the beginning of this dynasty as late as 1894 B.C.

[18] Sir Arthur Evans, *The Palace of Minos*, I, p. 198, fig. 146; II, pp. 265, 266, fig. 158. The one from Platanos would date from between 1950 and 1900 B.C., for it was found with Egyptian (not Minoan imitations as has been stated) scarabs of the early Twelfth Dynasty: Sidney Smith, *The Early History of Assyria*, p. 203.

[19] L. W. King, *History of Sumer and Akkad*, p. 344, note 3; A. S. Murray and others, op. cit. pl. IV, figs. 464, 695 and pp. 38, 39. At least two more of the Enkomi cylinders (Murray, pl. IV, figs. 606, 607) are contemporary with the foregoing. They are not Mesopotamian, but belong to Frankfort's First Syrian Group, which he dates to 2000–1700 B.C., *Cylinder Seals*, pp. 252–8. The tombs had evidently been re-used many times. In the first place this latter pair came from a tomb with a scarab of Tiya, wife of Amenhotep III, at about 1400 B.C. (Murray, p. 54, tomb 93 and p. 36, no. 608). Of the former two cylinders no. 695 had little to date it, but no. 464 was found in Tomb 84 with a quantity of Late Helladic III pottery (for the period of the Enkomi pottery see H. Bossert, *The Art of Ancient Crete*, figs. 475–77, 482, 483, and p. 42). This final use of the Enkomi tombs can be dated to 1250 B.C., by the presence of the faience rhyton in the form of a woman's head (Murray, pl. III). Similar rhytons (Bossert, figs. 499–501) come from a tomb at Ras Shamra which dates to the thirteenth century: Schaeffer in *Syria*, 1933, XIV, pls. XI, I, XII, 3, 4, and p. 106. For the precise dating of such rhytons to 1250 B.C. see Hall in *The Journal of Hellenic Studies*, 1928, XLVIII, 74. In the same way the cylinder from Hagia Paraskevi to be mentioned in the next lines was found in a tomb of the Late Bronze Age, i.e. about 1500–1200 B.C. Thus all these cylinder seals were found among objects which were many hundreds of years later than they.

[20] For these and the ones from Enkomi see H. B. Walters, *Catalogue of the Engraved Gems and Cameos, Greek, Etruscan, and Roman, in the British Museum*, 1926, pl. III and pp. 14 ff.

Inland from Enkomi, and straight up its river, the Pidias, another was found at Hagia Paraskevi one mile southwest of Nicosia (21). From Curium on the southwestern coast comes one which for the present argument is even better still, for it bears the name of a king Narâm-Sin (22). In view of its date, which is fixed by its workmanship to about 2000 B.C., this Narâm-Sin must be the same as he whose name was found on Cythera.

One result of this trade with the Far West was that a number of places there were mentioned on a tablet dating to the same period, about 2000 B.C. The tablet was found at Mari on the middle Euphrates, and it names Alashia (Cyprus), Ugarit (the north Syrian coast where lay Ras Shamra, the port for the West), Gubla (Gebeil, Byblos on the central Syrian coast), and Kaptaru (23).

There is yet another cuneiform tablet which not only names Kaptara but also brings us back to the point whence we started, i.e. the tin trade. This one comes from Asshur on the Tigris and is a late Assyrian copy, or might we say version, of a much earlier text. This earlier text shows signs of having been written at the period of the First Dynasty of Babylon (24), i.e. *c.* 2000 B.C., and describes the 'conquests' of a certain Sargon. He is generally presumed to be the famous Sargon of Agade, who reigned much earlier again than this (25), and who also had relations at least with Cyprus. At least two cylinder seals of his period have come from this island, where they are said to have been found together.

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[21] Bezold in *Zeits. f. Keilschriftforschung* II, pp. 191–3. The date is settled by King, loc. cit. and cf. W. Hayes Ward, *The Seal Cylinders of Western Asia*, pp. 344, 345, no. 1159. The tomb and the group with which the cylinder was found is published in M. Ohnefalsch-Richter, *Kypros the Bible and Homer*, pp. 34, 35, figs. 34–6; or else pl. CLXXI, fig. 14. It is of the Late Bronze Age which J. L. Myres, *Handbook of the Cesnola Collection of Antiquities from Cyprus* (New York), p. 31, puts as running from 1500 to 1200 B.C. Thus, here again, as at Enkomi the cylinder seal was found among objects much later than itself.

[22] L. Palma di Cesnola, *Cyprus*, pl. XXXI, fig. 1, facing p. 392. On pp. 316, 325, this and others are reported as having formed part of the great treasure of Curium, but there is considerable doubt about this, Myres, op. cit. p. XVI. It is here published again as no. 4300 on pp. 429, 430 and pl. facing p. 430. King, op. cit. pp. 343, 344, has established the date as that of the First Dynasty of Babylon, i.e. round about 2000 B.C. When Sayce first read the name, it was naturally supposed to be that of the famous and much earlier Narâm-Sin, a successor of the equally famous Sargon of Agade, *Trans. Soc. Bibl. Archy.*, 1877, V, 442.

[23] Report of an address by Prof. Dossin in *Comptes rendus de l'acad. des inscc. et belles lettres* (Paris) 1938, p. 367. Kaptaru, i.e. the Caphtor of the Bible, was a distant land beyond the Upper sea (the Mediterranean), as will be seen in the next lines. At one time scholars located it in Cyprus, and now on the strength of the Cytheraean inscription just discussed Weidner suggests that the name Kaptara might be brought into direct relation with that of Cythera, but discreetly adds 'with the utmost reserve'. It is generally thought to be Crete, and has commonly been thought to be the land of Keftiu of the Egyptian inscriptions. However, if Kaptara should be Crete, it cannot be the same as Keftiu in spite of the similarity of the two names, for Keftiu was definitely not Crete: Wainwright in *Annals of Archaeology and Anthropology* (Liverpool) 1914, pp. 24–83; id. in *The Journal of Egyptian Archaeology*, 1931, pp. 26–43; Gordon in *The Journal of Egyptian Archaeology*, 1932, pp. 67, 68; Wainwright in *Journal of Hellenic Studies*, 1931, pp. 1–38; id. in *Palestine Exploration Fund: Quarterly Statement*, 1931, pp. 203–16. Keftiu was the southern coasts of Asia Minor, and now Prof. Claude Schaeffer's excavations at Ras Shamra show that it must be extended to include the north Syrian coast as well.

[24] Albright in *Journal of the American Oriental Society*, 1925, XLV, 242.

[25] Like all other dates, that of Sargon of Agade has been progressively brought down lower and lower. Originally he was put at about 2850 B.C., then he came down to about 2650 B.C., and now he has come lower still, to about 2450 B.C.

They probably came from Hagia Paraskevi near Nicosia (26), and this proves to be a site which was already in use before, and continued in use long after, the time of Sargon of Agade (27). One of them actually bears his name, while the other is of a type common at his time (28). Ward claims another with the name of Bingani-Sharali, now called Bingani-Sharri and Shar-kali-sharri, great grandson of this Sargon, but this seems to be highly doubtful (29). But still, two of one and the same period from one find seems to indicate that they were contemporary imports, though their evidence has been much disparaged. But whether they were or not is probably beside the present mark. For, seeing that the tablet under discussion was evidently written at the time of the First Dynasty of Babylon, it may well be that the king concerned was not the famous ancient Sargon of Agade but a later and little known Sargon. This other Sargon was a king of Assyria who lived at the very time of this Babylonian dynasty. At this time, as has been seen, there was much connexion with the Far West (30), and this Sargon himself had to do with at least some western trade, for he evidently controlled the trade routes up to Caesarea Mazaca away to the northwest in Cappadocia (31).

This tablet from Asshur includes among the lands 'conquered' by Sargon 'the Land of *Anaku*, Kaptara, lands beyond the Upper Sea (the Mediterranean)' (32). *Anaku* is the Assyrian word for 'lead' or 'tin' (33), hence this Sargon, and (in view of

[26] M. Ohnefalsch-Richter, *Kypros the Bible and Homer*, fig. 111, p. 83, and pl. CLI, fig. 34, which is described on p. 455 as having been found with the other. They are nos. 181 and 136b respectively of W. Hayes Ward, *The Seal-Cylinders of Western Asia*, pp. 53, 69.

[27] Hagia Paraskevi goes back to the earliest Bronze Age, for the good polished red-ware characteristic of this period was much in evidence in a small test excavation: Myres in *Journal of Hellenic Studies*, 1897, XVII, p. 135. This earliest period is put at 3000–2000 B.C., id. *Handbook of the Cesnola Collection*, p. 8.

[28] i.e. the Sun-god crushing his enemy against a mountain: H. Frankfort, *Cylinder Seals*, p. 100, § c.

[29] W. Hayes Ward, op. cit. no. 183, pp. 69, 70. He says it was obtained in Cyprus by Gen. di Cesnola, but I do not find it in his book, *Cyprus*, nor yet in Myres' *Catalogue of the Cesnola Collection*, nor yet again in A. P. di Cesnola, *Salaminia*. In his Index of illustrations Ward says on p. X that it is in the British Museum, but I do not find it in H. B. Walters, *Cat. of Engraved Gems*. The cylinder seems to have been published originally by J. Menant, *Gazette des Beaux Arts*, 1879, pt. II, pp. 478 ff. and pl., and again by Menant, *Glyptique orientale*, I, pl. I and pp. 31, 75. Menant says it is in the New York Museum, but says nothing of its provenance.

[30] Forrer and Weidner think that he must be the Sargon of Assyria who reigned about 2000 B.C., Weidner, op. cit. p. 138. Sidney Smith, *Early History of Assyria*, p. 170, also puts him at this time, about 1985 B.C. He must not only be distinguished from Sargon of Agade who was much earlier than he, but also from the other famous and much later Sargon who reigned in Assyria at the end of the eighth century B.C., and actually set up his stele at Citium (Larnaka) in Cyprus: Sir George Hill, *A History of Cyprus* I, p. 104 and pl. IV facing p. 106. To a non-Assyriologist it would seem as if in the course of centuries the memory of these distant lands, Anaku and Kaptara, with which there had only been trade at the time of a little known Sargon, had gravitated to the saga of the heroic personality of Sargon of Agade, and, by claiming his conquests to have extended to the uttermost ends of the earth, these countries had served *ad majorem Sargonis gloriam*.

[31] Sidney Smith, op. cit. p. 182.

[32] Albright, loc. cit., p. 244, l. 41, and the commentary on pp. 236, 237.

[33] The word has lasted on into Arabic as *anuk* with the meaning 'pure lead', E. W. Lane, *An Arabic-English Lexicon*, I, p. 118, s.v. There is regularly confusion in antiquity between these two metals. The Egyptians had two metals, one called *dhty* and the other *dhy*. On the strength

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the evidence we cannot doubt that he was Sargon of Assyria and not Sargon of Agade), knew of a country beyond the sea which produced one or other, or perhaps both, of these commodities. The natural place to be called ' the Land of *Anaku* ' is Caesarea Mazaca in Cappadocia, where about 2000 B.C. the Assyrians were doing a great trade in *annakum* and even used it as a means of exchange, when it was called ' sealed *annakum* ' (34). Specimens of such *annakum* stamped with a seal have been found in Asshur, the capital of Assyria at this time, and they are lumps of lead, not tin (35). But it is impossible that Caesarea Mazaca should have been the land of *Anaku* in this context, for the preposition used is *ebirti*, which I am informed definitely means ' across, on the other side of ' the sea. Hence, this land of *Anaku* cannot be Cappadocia and must be sought ' across the sea '. This caused Albright to think of the famous mines at Laurium in Attica, and so he proposed to place the Land of *Anaku*, ' Lead ' or ' Tin ', in Greece. At first sight this seems strange, for we think of these mines as producing silver, as that is what they were famous for in classical days. But the silver was not obtained direct from the ore, but by a secondary process, of cupellation, from the argentiferous lead which was what was smelted from the ore (36). In early times the treatment may not have gone beyond the first process, that of smelting the lead, and even in classical times the mines turned out pigs of that metal (37). It is not known how early mining began at Laurium, but the district was inhabited in Mycenaean days (38).

Thus, a study of the ' Land of *Anaku* ' whence came lead or tin brings us back again to Greece, where we know that tin had been mined and smelted at Crisa from before

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of the Coptic *taht*, which clearly means 'lead', this would be the metal for which *dhty* stands. *Dhy* would then be ' tin ', and it does not appear until the Eighteenth Dynasty, the time at which tin was first known in Egypt as a separate metal. Even as late as Roman times Pliny and others were calling lead *plumbum nigrum* and tin *plumbum album* or *candidum*. Though in the first century A.D. Pliny uses a word *stagnum* for an alloy of silver and lead (for a very full discussion of the whole question of *stagnum*, *stannum*, Cassiterides, etc., see K. C. Bailey, *The Elder Pliny's Chapters on Chemical Subjects*, I, p. 209; II, pp. 191–4, 196), *stannum* with the meaning of ' tin ' is a late Latin word, first used by Jerome in the fifth century (Lewis and Short, *Latin Dictionary*, s.v.), and is related to the old Celtic root *stagnŏ-*, whence comes the Irish *stán*, the Welsh *ystaen*, and the Breton *sten*. A. Holder, *Alt-celtischer Sprachschatz*, II, col. 1631, s.v. *stagnŏ*. Like the Romans, the Arabs are very uncertain about their nomenclature, *Rasas* means ' lead ' and this is of two qualities, black and white. White *rasas* is also called *qasdir*, i.e. tin or pewter (Lane, op. cit. I, p. 1092 s.v. *rasas*). *Qasdir* is used for ' solder ' in the modern Egyptian dialect. Though the Romans were still confused about the two metals, the Greeks had long known them apart, calling lead μόλυβδος and tin κασσίτερος. Can their two mines have helped them to distinguish them from each other? Strangely enough both the words are non-Greek and of unknown origin, É. Boisacq, *Dictionnaire étymologique de la langue grecque*, pp. 419, 420, 644. For a discussion of the possibility of a Celtic origin of καττίτερος and a full bibliography dealing with this and other suggestions see H. Hubert, *Les Celtes et l'expansion celtique jusqu'à l'époque de la Tène*, pp. 207, 208.

[34] See for instance Driver in *Zeits. f. Assyriologie*, XXXVIII, pp. 217 ff. *passim*; G. Eisser and J. Lewy, *Die altassyrischen Rechtsurkunden vom Kültepe*, pp. 97–195, *passim* (published as *Mitt. Vorderas. -aeg. Gesellschaft*, XXXIII, 1930).

[35] Smith, *The Numismatic Chronicle and Journal of the Royal Numismatic Society*, 1922, pp. 176 ff. These actual specimens may be later in date, i.e. 1400–1200 B.C., but this is only conjecture, p. 180.

[36] É. Ardaillon, *Les mines du Laurion dans l'antiquité*, p. 81.

[37] id. op. cit. 87, 118 and fig. 25.

[38] id. op. cit. p. 127.

the days of Sargon of Assyria, whose trade it is that seems to be commemorated in this late Assyrian text. Moreover, we have been led stage by stage along the road followed by the Mesopotamian trade with the Far West at this very time of Sargon of Assyria. It went by sea *via* Cyprus, Crete and Cythera, towards the west coast of Greece, the Gulf of Corinth and Crisa. Though at present we have no concrete evidence that the Asiatics ever got beyond Cythera, tradition records that at some early time Cretans covered the last stages of the journey and settled at Crisa.

The result of the foregoing is as follows. Whether *anaku* was tin or lead it existed in Greece. Moreover, there is evidence that tin was being mined at Crisa, and might have been exported about the time of the Mesopotamian trade with the Far West; that is to say round about the time that the general consensus of opinion has been accustomed to put at about 2000 B.C. In fact mining seems to have begun there rather earlier than this. Further, if the ore was mined, it must have been smelted. The evidence also shows that tin was being mined there at about, or at any rate shortly after, the time that the Lesbian tin bangle was made. But of course that is not to say that its tin did come from Crisa, but only that it could have done so. What the two lines of evidence do help to show is that a knowledge of tin as a separate metal was widespread in the Aegean at that time. Lesbos shows yet another thing, which is that tin had been smelted in the Aegean world long before we have any suggestion that it was known in Egypt as a separate metal. Moreover, Crisa shows that already at that early time tin ore had been recognized and was being obtained by mining, and not by washing as it evidently had been at Byblos. Thus, the tin-industry on the north of the Mediterranean was totally different in every way from that of Byblos, the reflection of which we see in Egypt.

The Grim's Ditch Complex in Cranborne Chase

by C. M. PIGGOTT

MANY of the Grim's ditches and others of similar character in East and South England have been tentatively dated to the Late Roman or Saxon periods. The question of their date and purpose has frequently received attention in ANTIQUITY, notably by Sir Cyril Fox (1) and Mr O. G. S. Crawford (2).

But all these Grim's ditches need not be alike, and the group of linear earthworks known by this name in Cranborne Chase is especially distinctive. Parts of it can perhaps best be compared with the Grovely Grim's ditch, with which it is almost certainly associated, and which was described by Mr Crawford in his article on ' Our Debt to Rome ' (3) as being pre-Saxon. Since then Sir Charles Oman has suggested a later date for it, and put forward the view that Grim's dyke, and other ditches in the southeast of Wiltshire ' were thrown up to mark the limit of the Saxon frontier ' (4).

Though the exact purpose of the ditches must for the time being remain uncertain, it is the aim of this article to show almost conclusively that they were constructed not in the post-Roman period at all, but in the Late Bronze and Early Iron Ages.

This Cranborne Chase Grim's ditch has been fully described by Mr Heywood Sumner (5), and it is from his book that the map (6) now published has been adapted. Though it does not pretend to be accurate in detail, it gives a clearer picture than anything since published, and the same can be said for Mr Sumner's excellent account of the ditch. Not only did he survey its entire length, but he supplemented the knowledge so gained by excavation, which, though rather inconclusive in result, led him to believe that the ditch was pre-Roman in origin. These notes will substantiate his argument.

Mr Sumner's account begins as follows :—' Grim's Ditch is a continuous earthwork —a ditch between two banks—that meanders up hill and down dale across the eastern portion of Cranborne Chase. The length of its course is about fourteen miles. Its usual width is from 50 to 60 feet from outside to outside of its banks. One or other of the banks is frequently the higher, apparently without defensive purpose, but owing to the lie of the land. Where it is most perfect the superficial bottom of the ditch is from 5 to 6 feet below the higher bank. Its course twists and turns in a manner that is now unintelligible. In some places it is overgrown with hedgerows and timber trees ; here the ditch is silted up with the woodland litter of years. In others the plough has cut away the banks and only the ditch remains ; while again elsewhere both banks and ditch have been ploughed and spread so thoroughly that the earthwork is quite obliterated, and its direction can only be traced by chalky banks—representing the spread banks —on either side of a single band of better soil—representing the spread silt of the ditch '. His account then continues, and includes the opinions of some earlier antiquaries, notably Warne (7) and Colt Hoare (8). Aubrey confused Grim's ditch with Bokerly Dyke.

[1] ANTIQUITY, 1929, III, ' Dykes ', pp. 135–55.

[2] ANTIQUITY, 1930, IV, ' Grim's Ditch in Wychwood, Oxon.', pp. 303–15, and ibid. 1931, V, ' The Chiltern Grim's Ditches ', pp. 161–71.

[3] ANTIQUITY, 1928, II, 180. [4] *Arch. Journ.*, 1930, LXXXVII, 68.

[5] *The Ancient Earthworks of Cranborne Chase*, 1913.

[6] Kindly drawn by Miss V. M. Dallas.

[7] *Ancient Dorset* (Bournemouth, 1872), p. 6–7, and Appendix, p. 309.

[8] *Ancient Wiltshire* (London, 1810), I, 232 ff.

A year ago, while staying in Rockbourne, Mr Christopher Hawkes, with his recent work on Late Bronze Age ditches north of Salisbury in mind (9), expressed the opinion that the Grim's ditch might well belong to this same date. Certainly its wayward behaviour and outward appearance, quite unlike any recognized post-Roman works, calls for comparisons with many of the earlier wandering ditches (10).

To prove or disprove this theory fieldwork was carried out along much of the ditch, and in addition a cutting was taken across one of the most ploughed-out portions of it, on the west side of the Rockbourne–Coombe Bissett road, near to the modern house known as Grim's Lodge (map, point 5). The prime result of this fresh survey was the conviction that we were observing a complex of ditches and not a unitary work. (In these notes I use the term 'main ditch' in reference to the bigger E-W. stretch. There are two other stretches described here, one running from near Clearbury Ring to near Whitsbury Castle Ditches; the other from Damerham Knoll westwards).

The more important observations which throw some light on the date or continuity of the ditch will now be discussed. (*Note that the numbers* 1–13 *below refer to the map*).

1. When General Pitt-Rivers was excavating the Martin Down Late Bronze Age enclosure (11), some workmen drew his attention to a small ditch running roughly north and south about 500 feet to the east of the enclosure. With characteristic thoroughness he 'caused 300 feet of both ditch and rampart to be excavated', and was then satisfied that it was contemporary with the enclosure. Subsequently he traced the small ditch northwards 'in a straight line across the common to the Roman road for a distance of 1000 yards and on to the northward, where it joins an entrenchment in Vernditch Chase'.

Now the stretch of the small Martin Down ditch between the Roman Road and the much larger main ditch in Vernditch Chase, was for some reason or other omitted both in the Ordnance Survey maps and by Mr Sumner, and as it is important to our argument, I have marked it on the map as a newly discovered section. (In actual fact it is quite clearly visible on the ground in winter months, though thickly overgrown with young bushes).

After its junction with the main ditch, this smaller ditch shows no sign of reappearing on the north of Vernditch Chase (12), and therefore, unless the Grim's ditch was aligned exactly to touch the north end of the small ditch, a most improbable event, we are left with the likelihood that the main Grim's ditch was contemporary with, or earlier than, the Late Bronze Age.

As points 2 and 3 on the main ditch were similarly stopped on the Roman road, one would naturally, on looking at the maps, have assumed that the Roman road was already in existence when the Grim's ditch was built. In actual fact this was not the case. For having shown the probable date of Grim's ditch to be Late Bronze Age, the next step was to investigate points 2 and 3 on the map to see whether either or both might produce evidence in support of this date. Both did so.

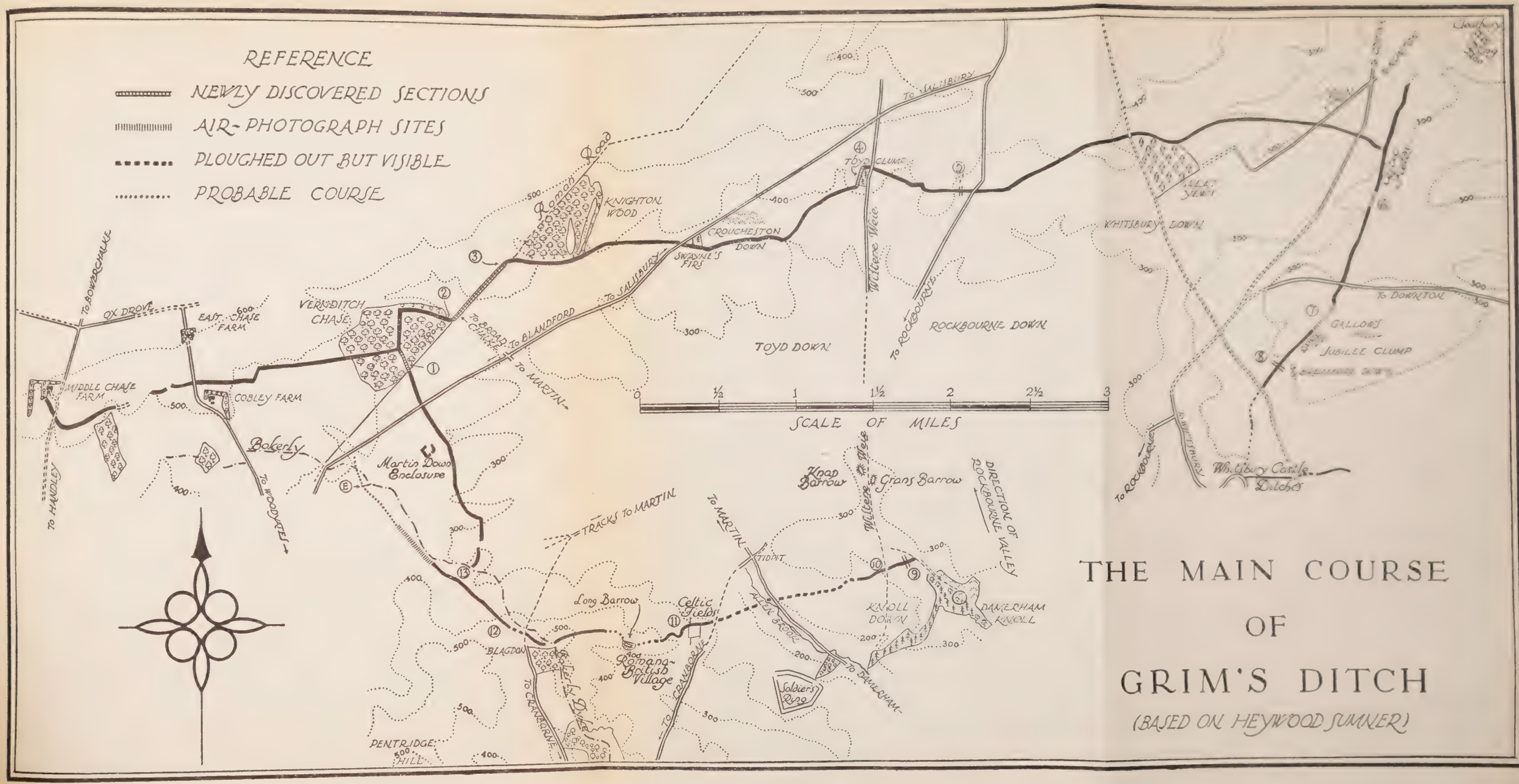
2 and 3. Although thickly overgrown, it is possible, in winter at all events, to distinguish the line of the ditch curving into and out of the line of the Roman road between points 2 and 3; that is to say it was formerly continuous, either under or over the Roman

[9] Quarley Hill report, *Proc. Hants. Field Club*, 1930, XIV, 143.

[10] See also, 'Five Late Bronze Age Enclosures in North Wiltshire', in *Proc. Prehist. Soc.*, 1942, VIII, p. 48 ff.

[11] *Excavations in Cranborne Chase*, IV, 190.

[12] It is unlikely that a northward extension of this small ditch could have been obliterated by ploughing, like so many stretches of Grim's ditch proper. For Vernditch is known to have been kept as a deer preserve since early medieval times.


REFERENCE
NEWLY DISCOVERED SECTIONS
AIR-PHOTOGRAPH SITES
PLOUGHED OUT BUT VISIBLE
PROBABLE COURSE
THE MAIN COURSE
OF
GRIM'S DITCH
(BASED ON HEYWOOD SUMNER)
SCALE OF MILES
0 ½ 1 1½ 2 2½ 3
Roman Road
KNIGHTON WOOD
CROUCHESTON DOWN
SWAYNE'S FIRS
TOYD CLUMP
TOYD DOWN
ROCKBOURNE DOWN
WHITSBURY DOWN
GALLOWS
JUBILEE CLUMP
TO SALISBURY
TO BLANDFORD
TO MARTIN
TO ROCKBOURNE
TO DOWNTON
TO WHITSBURY
TO BOWERCHALKE
TO HANDLEY
TO WOODYATES
OX DROVE
EAST CHASE FARM
VERN DITCH CHASE
BROAD CHALKE
MIDDLE CHASE FARM
COBLEY FARM
Bokerly
Martin Down Enclosure
TRACKS TO MARTIN
Knap Barrow
Grans Barrow
DIRECTION OF ROCKBOURNE VALLEY
TIDPIT
Long Barrow
Celtic Fields
ALLEN BROOK
KNOLL DOWN
DANEHAM KNOLL
BLAGDON
Roman-British Village
Soldiers' Ring
TO DANEHAM
TO CRANBORNE
TO ROCKBOURNE
PENTRIDGE HILL
Whitsbury Castle
Ditches

facing p. 66

road. The argument in this paper requires that the Road should here overlie the filled-in ditch and levelled banks of the Grim's ditch. Only excavation can prove this hypothesis. Looking at the map one might view this suggestion with scepticism, for one could argue that it is unlikely that the Romans would align their road exactly to overlie an earlier length of ditch. If, however, one stands on the angle of the Roman road to the north of Knighton Wood, this can perhaps be explained more convincingly. For, if we are right, the Roman surveyor, having diverted his road to negotiate a coomb, and looking southwest for a new landmark, could see no better line than that of the Grim's ditch. However this may be, when the road reached the lower ground, near its present junction with Bokerly Dyke, its course had to be corrected and aligned slightly more to the east to continue its course towards Badbury.

4. Toyd Clump. Here, on earlier maps, the ditch appears to stop at the northwest and southwest corners of the wood. Yet the Saxon charter (13) giving the bounds of Bishopstone describes them as coming from Stratford Tony southwards along the *Wiltene Weie*, turning along the Ditch westwards from its junction with the road, and so following it to the boundary of Broad Chalke. ('. . . *on Stretford. on hrofan hric. andlang weges. on pa dic to bymera cumbe* . . .', etc). This suggests that the ditch was unbroken from its junction with the *Wiltene Weie*, and a visit to the site confirmed this. It continues round the wood though much overgrown.

5. The recent cutting. I am most grateful to Mr John Thake and Mrs Maxwell-Hyslop for their help in digging this section. Without this, and with the war-time impossibility of obtaining paid labour, any excavation would have been out of the question. The trench was cut from north to south across the line of the ditch and showed that nearly half the material filling it was due to ploughing, probably in the last 200 years. Below this soil was a one-time surface, on and in the humus of which were found numerous rejects of a flint-knapper who had evidently used the shelter afforded by the banks while he made his gun flints. Below this level was a layer of slow-forming silt and many large blocks of flint, and below this again was the primary silt of clean white chalk. In this layer were found two flint scrapers, one having slight secondary working, and being patinated to a milky white. Neither is closely datable, but both probably belong to the Middle or Late Bronze Age, and are at least unlikely to be later.

The shape of the ditch, with its steep sides and narrow flat bottom, agreed exactly with the sections dug by Mr Sumner, both on Breamore Down and Knoll Down (see points 8 and 9).

After this point the ditch continues eastwards past the Great Yews and across the tracks to Odstock and Nunton. It then joins an apparently earlier length of ditch running north and south between Clearbury and Whitsbury (14). This junction is a curious feature, and were it not for an excellent air-photograph, one might suspect that the ditch travelling eastwards had perhaps been ploughed out after this point. But the photograph, published by Mr Crawford in his article on 'Cerdic and the Cloven Way' (15) makes it perfectly clear that the length of ditch running north and south was dug first, and was used at some later date as the eastern side of an enclosure.

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[13] *Codex Wintoniensis*, quoted by the Rev. Du Boulay Hill in *Wilts. Arch. Mag.*, XXXVI, 50–6, 'The Saxon Boundaries of Downton, Wilts.' See also Mr Crawford's note at the end of this paper.

[14] Beyond Clearbury to the north and east the ditch is not traceable across the Avon valley, but a similar ditch, possibly the same one, reappears on Standlynch Down, 3 miles to the east and 'runs up and along the west slope of the Down to the Sarum and Romsey high road, after which it is lost in cultivation'. (Heywood Sumner).

[15] ANTIQUITY, 1931, V, pl. I, opp. p. 444.

6. The same photograph also shows two other points of interest. First it clearly marks the ditch as being continuous, at this point where it is invisible from the ground. But more important than this : it reveals the fact that the ditch here has been used as a boundary for a Celtic field-system presumably of Iron Age or Romano-British date. Mr Crawford in describing this plate says (16), ' The air photograph indicates that it (the ditch) was dug through some Celtic fields '. This opinion he has recently changed. Certainly in no part of the photograph is a lynchet line cut through by the ditch, though many fields abut on to it.

7. Another portion, invisible from the ground is shown in plate II of the same paper. An air-photograph of this part of the ditch continues its line southwestwards to Jubilee Clump.

8. Mr Sumner's cutting on Breamore Down (17). This section unfortunately produced no finds.

From here the ditch continues in a southwesterly direction until it apparently ends abruptly on the valley track to Great Yews from below Whitsbury Castle Ditches (18). Colt-Hoare said he followed it to the Iron Age castle ditches. This strongly fortified and thickly wooded camp, though not on very high ground, commands a wide prospect of country and from it radiate no less than three ditches, probably all associated in a Late Bronze Age division of land, and calling for comparison with Sidbury Hill (19) in Wiltshire, and Quarley Hill. Only two are shown on the map. The third emerges from the southeast of the camp and can be traced for over a mile in the direction of the New Forest, but it is lost before reaching the Avon valley.

Between Whitsbury Castle ditches and Damerham Knoll (20) there is no indication of the Grim's ditch crossing the Rockbourne valley. A possible claimant is a short length of earthwork to the east of Rockbourne church, but its character is different and suggests a medieval rather than a prehistoric date.

9. We now pick up a Grim's ditch on Damerham Knoll, immediately west of a group of tracks leading southeast. The terminal point of the ditch with its rounded off bank respects these tracks, which, if they lead to the small camp on top of the hill, are probably of Early Iron Age date. Proceeding in a WSW direction we come to Mr Sumner's second cutting. This revealed sherds, ' probably pre-Roman ', three feet down in the silt of the ditch, and some similar pottery on the old turf-line under one of the banks. Most unfortunately no more was said about this pottery and it seems to have been lost.

10. A little to the west of this last point, the *Wiltene Weie* cuts through the Grim's ditch, and the bank so removed has been added to the point of junction on the south side.

Between 10 and 11 the course of the ditch can be seen from the high ground on either side of the valley. It was evidently clearer in Colt-Hoare's time as he was able when riding from the opposite direction to say ' the bank and ditch having crossed the valley, leave Allenford barn to the right, and ascend Windmill Hill (he means the Knoll, for

[16] ANTIQUITY, 1931, V, 454.

[17] *The Ancient Earthworks of Cranborne Chase*, pl. XXXIV.

[18] See J. P. Williams-Freeman, *An Introduction to Field Archaeology as illustrated by Hampshire*, p. 418 and plan opposite, and *Earthworks of Cranborne Chase*, p. 20.

[19] See *Proc. Hants. Field Club*, 1939, XIV, 144 *et seq.*, and map, Fig. 1. This map is of the greatest importance in showing the system of land division in Late Bronze Age times.

[20] *Field Archaeology of Hants.*, p. 400 and plan opposite, and *Earthworks of Cranborne Chase*, p. 28.

Windmill Hill is considerably further northwest) . . . here the bank and ditch are soon lost ' (21). Today this stretch can only be seen in certain lights and conditions.

11. Up on the high ground again and immediately beside the track from Cranborne to Tidpit, the ditch reappears in strength and skirting the edge of the Romano-British village on Tidpit Down, for a short length it forms one side of a field-system which probably belongs to the village. It certainly does not cut through these lynchets. This area is thickly strewn with Romano–British pottery. After a short distance the ditch is again lost in cultivated land and is no longer visible by the time it passes a Long Barrow, though Colt-Hoare reports that ' a little to the west of this village (Tidpit Romano–British village) we clearly see that the bank and ditch have deviated from their course in order to avoid a Long Barrow '.

12. Shortly after this the ditch is strongly defined once more and it can be followed up to a point on Blagdon Hill, where it apparently ends opposite a gap through the Bokerly dyke which it meets at right angles. Now Bokerly dyke is known from the excavations of General Pitt-Rivers (22), to be of a late Roman construction put up to defend the south of Wessex from Saxon invaders coming down from the north by way of the Roman road (the Ackling dyke). So it can be seen that if we are making a claim for the Grim's ditch to be pre-Saxon, the point of junction between it and Bokerly dyke must be reinvestigated—for as it is we are certainly led to believe that Grim's ditch is the later of the two.

Fortunately we find Grim's ditch continuing on the west side of Bokerly dyke immediately opposite where it stopped on the east. Between these two ends the bank appears to have been thrown down into the ditch by whoever wanted to break the line of Bokerly with a causeway.

After this apparent gap Grim's ditch swings in a northwesterly direction roughly parallel to Bokerly. This part is becoming yearly more obliterated owing to a plantation of young fir trees upon it, which threaten to deface it completely in a few years' time. Here too the north bank is missing for large stretches at a time, and it may well have been carted across by the builders of Bokerly for heightening their vallum.

Between points 12 and 13 the ditch has been much ploughed down, particularly in the lower ground by point 13.

13. Whether or not the ditch was at this place joined by the small Late Bronze Age ditch mentioned in connexion with point 1, we cannot tell without excavation, and a very narrow cutting would be all that is necessary to answer this question.

From here, as one looks down into the valley towards the epaulement of Bokerly dyke (E on map) one can see the line of Grim's ditch continuing on almost in a straight line from the top of Blagdon. Between points 13 and E an air-photograph (23) shows its relation with other earthworks near to part of Bokerly dyke where a causeway is called ' the gap '. It is also apparent on the ground that there are later lynchets on *both* sides of the ditch. It appears then to pass under the epaulement between the modern gap made by a cart-track and the end of it where the redoubtable General Pitt-Rivers made some cuttings (24). After this I think it follows the line of a hedge for a short distance

[21] *Ancient Wilts.*, I, 234.

[22] *Excavations in Cranborne Chase*, III.

[23] See *Wessex from the Air*, pl. XLIII, and pp. 230–2. It is suggested that nos. 2 and 6 on this plate may be part of a ' long mound ' of Maiden Castle type, with another mound similarly aligned but just out of the photograph. This looks very possible from the ground. Its length would be a little over 600 ft.

[24] *Excavations in Cranborne Chase*, III, pl. CLXX.

before passing under the line of Bokerly, to reappear some distance further on, this time on the northeast of that Dyke. This, however, is uncertain, and would need excavation to confirm it. It would still be possible for it to continue its line across the modern road, avoiding by a few yards the area excavated by General Pitt-Rivers, known as his Woodyates site (late Romano-British) (25). Certainly it would have been discovered by him in one of his 'drain' cuttings, had it crossed anywhere between this point and the junction of Bokerly and the Roman road.

There is no visible sign of Grim's ditch further than this, and we do not know whether it ever crossed to join the better preserved section between Vernditch Chase and Cobley farm.

SUMMARY

This short account has made it reasonably clear that we have no grounds for continuing to regard this Grim's ditch complex as a post-Roman work. Nor can we regard the three stretches of Grim's ditch described above, as belonging to the same date. The main stretch we have dated fairly certainly to the Late Bronze Age, and similarly the stretch between Clearbury Down and Whitsbury, the first of the three to have been dug. The third portion, that running between Damerham Knoll and the southwest side of Bokerly, is apparently later, for its terminal point respects an ancient track probably leading to the undated, though presumably Iron Age earthwork on the Knoll.

This system of land enclosure was, we have good reason to suppose, initiated in the Late Bronze Age, and the tradition was carried on into the Iron Age. We can observe no change in the method of digging, no alteration in design or fashion, although we may be considering earthworks of several hundred years' difference in date. In the later portions the profile is still the same, and the same meandering course is adopted with its unexplained angular bends at intervals. Sir Cyril Fox, who visited parts of all three stretches with me, suggested that many of the shorter bends and twists may well have been caused by the diggers weaving the course of the ditch between large trees. If this were so one might assume that long straight stretches were dug across open country, and the larger angles could be explained either by the desire of the ditch-makers to include or exclude a building or piece of land, or, as seems more probable, if the ditch was dug by gangs, two gangs working towards each other to join at a wood or copse of thick thorny undergrowth, on reaching this from two sides would then follow round the edge of it until the join had been completed. In other words, the shape of the copse would dictate the course of the ditch.

In considering the purpose of the earthwork system as it appears on the map published here, we must look to the latest member of the group to give us a clue. Certainly it appears probable that the stretch of ditch starting on Damerham Knoll was designed to complete a roughly rectangular enclosure, making use of two earlier stretches of ditch which may or may not have been designed for this purpose. Whether this enclosed area of about sixteen square miles was subdivided we cannot say, but there are no visible signs of any smaller ditches within it today. Quite possibly too the small Martin Down ditch may have been silted up and forgotten by the time the later part of the enclosure was dug. But we have only fragments of a complex system to deal with, and it would be unprofitable to theorize on the purpose of an arbitrarily chosen unit which may itself be part of a much more extensive whole. For away some eight miles to the north a line of ditch almost parallel to the main line in Cranborne Chase can be

[25] ibid. p. clxii.

found in Grovely Forest, while further south the Combs Ditch (26), may be one side of yet another land division.

Whatever the purpose of these divisions, whether they delimit tribal areas or cattle ranches, arable or pasture, they are of importance to us mainly because they reflect not only a peaceful population but one which has some form of government to enforce respect for its institutions. We must recognize that we are dealing with an ordered society whose laws were designed not only for its villages but for widely distant farms as well. These linear ditches, although only a few are still able to impress us by their size, must nevertheless command our respect, for they may well be the earliest large-scale land divisions in western Europe.

It can be seen from these notes that the information gained through only a small amount of fieldwork is most stimulating and instructive. The whole of Wessex is thickly covered with ditches, enclosures for livestock and field systems, many of which, as Mr Crawford has made so clear (27) are demonstrably contemporary with each other.

Now that more land than ever before is under the plough, it cannot be too strongly urged that every advantage should be taken of the situation to ensure (A) that sites in danger of being ploughed out are noted first, and (B) that features now showing for the first time should not be allowed to revert to grass or be planted with trees before they have been adequately recorded.

If we make full use of the opportunities now in our hands, it should be possible for a map of the Late Bronze Age, as well as the Iron Age and Romano-British period in Southern Britain, complete with nearly all its main features, to be published within a few years. Fieldwork with 6-inch maps, preferably in winter before the crops are high enough to damage by trampling, supplemented by air-photography and a very few simple excavations, are all that is needed : the amount of information gained of the greatest importance for making prehistory *live* by showing how the people conducted their actual doings on the ground.

NOTE

by O. G. S. Crawford

It will be noted that two lines of ditch converge on the hill-fort of Whitsbury. This is a feature that recurs at Quarley and Sidbury, and at the former place the ditch proved to be earlier than the hill-fort. It is evident that this Grim's ditch is part of a network like that covering part of Salisbury Plain and North Hampshire ; the age and purpose of this network is discussed in the Foreword to the Amesbury Sheet (*Celtic Fields of Salisbury Plain Series*) whose publication by the Ordnance Survey was held up at the last moment in 1940. It was the purpose of this series of surveys, based on air-photographs and fieldwork, to build up just such a map as is contemplated in the last paragraph.

As regards the name, Aubrey, in his unpublished *Monumenta Britannica* (fol. 90) clearly applies the term Grim's ditch to Bokerly dyke, a far more conspicuous affair. On the other hand, there are examples elsewhere of ditches of the same character as the one here described having the name Grim's ditch.

The name *Wiltene Weie* (the Wilton road) shows that the bounds, though doubtless Saxon in origin, are post-Conquest in their present form. But this does not affect their evidential value here.

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[26] Heywood Sumner, *Local Papers* (Chiswick Press, 1931), p. 89 ff.

[27] *Air Survey and Archaeology*, Ordnance Survey Professional Papers, no. 7, 1928.

Weighing Wool in the Middle Ages

by J. W. Shilson

In the Middle Ages wool was so valuable that it was necessary to have an accurate means of weighing whereby the merchant, in the presence of the farmer at the farm, could weigh the wool to the satisfaction of all concerned.

The method described below was used all throughout the Middle Ages and until quite recently, and as I am one of the last of those who were brought up from boyhood in the use of this system and in conforming to some of the ancient customs of the country Wool-Staplers, it seems only right that I should prepare this record before it is too late to do so.

The problem was to obtain as accurate a weight as possible, using the simple form of weighing machine then available, and to satisfy both the farmer (who sold) and the merchant (who bought) that the sale was to their mutual benefit. It was customary to weigh the wool at the farm, the farmer supplying the beam and scales and the woolman or merchant the weights.

The Scale-Beam. The beam-and-scales consisted of a simple beam suspended at its centre and provided with a loop at each end. The ' scales ' or ' weight-pan ' consisted of boards about 18 inches by 20 inches, suspended by four ropes, one at each corner and all leading to a hook which fits the loop at one end of the beam. Such a device would hold six or seven fleeces which were held in place by the board and the four ropes. When empty, the two scales were adjusted by putting coins on the light one until they hung evenly and the beam was horizontal. So simple a device was within the means of any considerable farmer and smaller farmers could always borrow such a beam and scales from a neighbour. A scale-beam of this pattern used by the writer for many years will turn fairly quickly with a difference of the weight of a half-penny, i.e. it is sensitive to about one-thousandth of the load, which is ample for its intended purpose.

The Weights. The merchant rode on horseback to the farm and took with him two 7-lb. weights, slung by a leather strap on each side of the front of the saddle. These weights (which were panel shaped, about 5 inches by 4 inches by 1 inch with a hole near one end for the strap) bore the Royal Arms (which served as a licence to use them), were very beautiful in design and now realise fancy prices as antiques. To protect them, and to prevent them from chafing the horse they were enclosed in leather pouches. The merchant also carried in his saddle-bags (in addition to his personal gear) three other weights, viz. : 4 lb., 2 lb., and 1 lb., respectively. With these five weights the merchant was able to weigh any quantity of wool offered to him by proceeding in the manner described below.

The chief unit of weight was the *tod*, which was 28 lb. No single weight of this value was used, but it was made up by placing the two 7-lb. weights in one of the scales and a lump of stone or other convenient object in the other. The stone was cut or chipped until it weighed precisely 14 lb. Before commencing to weigh the wool this token-weight was placed in the same weighing-scale as the two 7-lb. weights, making a total weight of 1 tod (28 lb.).

The stone or other token-weight was retained by the farmer, and, if undamaged, could be used several seasons, but it was always easy to replace it. Its actual weight was invariably checked before commencing the weighing of a wool-clip. Its use saved the merchant from carrying a needlessly heavy weight. It is probable that this use of a stone as a token-weight is the origin of the term ' one stone weighs 14 lb.' though, as is well known, the weight of ' one stone ' varies greatly in different industries, and even in different localities.

As fleeces vary in weight and as (on account of the rapidity of weighing required and for other reasons) it was impracticable to remove any wool from the fleeces to make the wool just ' turn the scale ', it was necessary to place several fleeces on the scale and weigh them to within 1 lb., it being understood that the wool must always ' turn the scale ', i.e. the beam must tilt downwards at the wool-scale end at every weighing.

As the farmer, or his man, took each fleece from the pile and passed it to the merchant or his man (the weigher), it was inspected and approved as regards quality, cleanliness, and all other characteristics before being placed on the scale. Should the weigher consider any fleece to be defective or inferior in any way, he would cast the fleece aside to be weighed separately with other ' casts ' and settled for at a specially agreed price at the end of the wool-weighing. As soon as a sufficient number of fleeces had been laid on the scale to cause the scale to tilt at the wool-scale end, the balance was restored by means of one or more of the three smaller weights, the weighing always ending with the wool-scale lower than the other.

Supposing there were five fleeces and that they ' turned the scale ' with 1 tod and 2 lb. (30 lb. in all) on the weight-scale, the weight of the wool would be rather more than 30 lb. but less than 31 lb. No more accurate weighing would be possible as 1 lb. was the smallest weight used. Hence the merchant received rather more than the true weight by an amount which could not exceed 1 lb. but might be anything between (say) $\frac{1}{2}$ oz. and $15\frac{1}{2}$ oz. This difference, which averaged exactly $\frac{1}{2}$ lb. per tod in favour of the merchant, was termed the *draft*, and was the origin of the draft of 2 lb. per cwt. ($\frac{1}{2}$ lb. per tod), which was customary in the Wool Trade and, in its present form, but reduced to 1 lb. per cwt. in 1920, persists to this day.

As soon as the weight had been ascertained, the weigher would announce the total of the adjusting weights, using a phrase such as ' two to the Wool '. This would mean that the weights on the weight-scale were 2 lb. more than a tod. The weigher would then place the 2 lb. weight on the floor near to the scale containing the wool, where all concerned could see it. The only booking done was to enter the number of fleeces (say 5) on a line in the merchant's book, the farmer making a similar entry in his book. It was understood that each such entry represented exactly one tod of wool. The correction for the additional weight (say 2 lb.) was made in the next weighing.

The fleeces were then removed from the scale and the weighing of a further lot of fleeces was done in the same manner. If this lot weighed 29 lb., i.e. 1 tod and 1 lb. the weigher would announce ' two to the wool and one more makes three to the wool ' and would place 3 lb. on the floor as before. He would then enter the number of fleeces in the second weighing in the same manner as those in the first weighing.

As the number of weights set aside on the floor increased the weigher would ask for a smaller number of fleeces to be passed to him for the next weighing. He would probably find that the smaller number of fleeces on the scale weighed less than the tod, i.e. less than 28 lb. He would then ' turn the scale ' by laying suitable weights on the wool. If these counterbalancing weights amounted to (say) 5 lb., the weigher would announce ' five pounds less three due to the wool leaves two pounds to the weights ', and on this

being agreed by the farmer the weigher would lay a 2 lb. weight on the scale beside the stone. He would then enter the number of fleeces (in the same case 4) in his book and the farmer would do the same.

This procedure would be continued until ten tods had been weighed, when the weigher would agree with the farmer that they had both entered 10 tods on the appropriate line of figures in their respective books. When the next tod of wool was weighed they would each begin a new line and to ensure that there was no mistake the weigher would say ' beginning a new line ' as he entered his figure, thus announcing the start of a new line to the farmer. The weighing was continued until sufficient fleeces had been weighed to fill one wool-sheet. After each lot of fleeces had been weighed it was packed

5,	5,	4,	5,	5,	5,	4,	4,	5,	5,	
5,	5,	5,/	4,	4,	5,	5,	4,	5,	5,	781
5,	4,	5,	4,	4,/	5,	5,	5,	4,	5,	782
4,	4,	5,	5,	5,	4,	4,	5,/	5,	5,	783
4,	4,	4,	5,	5,	4,	5,	5,	4,	5,/	784
4,	6,	4,	4,	5,	5,	5,	4,	4,	5,/	785
5,	3,	4,	5,	4,	6.					786

and 6 lb.

Odd Wool. 22 lb. (in bale 786).

66 tods, 6 lb. at 23*s* 4*d* per tod £77 5 0

22 lb. at 4*d* per lb. 7 4

£77 12 4

FIG. 1. A PAGE FROM A WOOL-STAPLER'S WEIGH-BOOK

in a sheet by the farmer's men with the help of the merchant's packer. The entries in the merchant's and the farmer's books would then be compared and agreed.

The packer would declare the number of the sheet (say 781) which would be entered at the side of the page (see FIG. 1), and a tick would be made on both the merchant's and the farmer's books to indicate which was the last lot of fleeces to be packed in each sheet and also to mark the beginning of the packing of a new sheet.

The first two lines of the illustration show that sheet no. 781 contained 62 fleeces weighing 13 tods, i.e. $13 \times 28 = 364$ lb. The actual weight of the wool in each sheet was greater than the number of tods because of the $\frac{1}{2}$ lb. draft accruing from each weighing. Thus the wool, in sheet 781 would weigh 13 tods plus $\frac{1}{2}$ lb. per tod, i.e. $6\frac{1}{2}$ lb. draft.

In addition, if ' the state of the weights ' after the last fleeces had been put into the sheet were 216 to the wool ; the wool in the sheet would weigh an additional 2 lb. over

and above the $6\frac{1}{2}$ lb. draughts above mentioned, making a total *true* weight of 13 tods $8\frac{1}{2}$ lb. or $372\frac{1}{2}$ lb. Similarly if ' the state of the weights ' had been ' 3 lb. to the weights ', the weight of the wool in the sheet would be 3 lb. short of the weight booked plus the drafts, i.e. $364+6\frac{1}{2}-3=367\frac{1}{2}$ lb. No entry would be made of ' the state of the weights ' as this would be adjusted at the weighing of the next fleeces.

If for any reason the entries in the merchant's and farmer's books did not agree, the error was quickly found because it was an easy matter to take the fleeces out of the

Bale	*Tare*	*Cwts.*	*Qrs.*	*lb.*	
781	14	3	1	20	
782	14	3	0	19	
783	14	3	1	20	
784	14	3	0	26	
785	14	3	2	15	
786	14		3	18	
	84	17	3	6	
	Tare		3	0	
		17	0	6	
	Draft		1	6	
		16	3	0	
Less Oddments				22	
	FLEECES	16	2	6	= 66 tods, 6 lb.

Fig. 2. ILLUSTRATION OF THE ENTRY IN A MODERN WOOL-STAPLER'S WAREHOUSE BOOK ON THE RECEPTION OF THE CLIP SHOWN AS 'WEIGHED BY THE TOD'

pack and confirm the number actually weighed, since the beginning of the packing of that particular sheet, when the merchant's and farmer's books agreed. When the last ' tod of wool ' had been weighed ' the state of the weights ' was entered in the books. For instance if the last weighing showed ' 6 lb. to the wool ' the phrase ' and 6 lb. ' would be written down after the entry of the last tod weighed. (See FIG. 1).

It will be seen from this description and illustration that one very great advantage of this method of weighing is that arithmetical calculations are reduced to a minimum. Each line shows the number of fleeces in 10 tods ; the six additional tods shown at the

end of the entries show the remaining weight and the note ' and 6 lb.' shows the weight above the number of tods. If the final weighing had been (say) 2 lb. short of a tod the last entry would have been ' 5 fleeces 26 lb.'. In other words, all the adjustments are made on the succeeding weighing except the last when, as there is no other, an entry of the odd pounds must be made in the books.

The checking of the number of fleeces and of the weights is as accurate as possible, because both are agreed after the weighing of each 10 tods and at the completion of the packing of each sheet. Moreover, the exact number of fleeces weighed can be computed at any time and the farmer can thereby satisfy himself that he has sold all the fleeces he has shorn. In this way a very valuable check on theft is obtained, for if any fleeces had been stolen between shearing and weighing the farmer would be made aware of it and could take appropriate steps.

The greatest advantage of this method of weighing and checking was, however, that it enabled the amount to be paid for the wool to be agreed before the merchant and the farmer parted and, if the farmer so desired, he could receive immediate payment in full. As each fleece was inspected and approved before being weighed, no claim could be made later by the merchant as to the quality or quantity of the wool.

Adjustments for Defects. A few defective fleeces inevitably occur in any large clip and the custom was to settle the amount to be paid for these at the conclusion of the weighing.

As previously explained, there is an error of less than 1 lb. on each weighing, owing to 1 lb. being the smallest weight used. This error, which averaged ½ lb. per tod, was always against the farmer and in favour of the merchant, but it was always clearly understood that whilst the weight known as a tod weighed 28 lb., a ' tod of wool ' actually weighed 28½ lb. When, later, wool was weighed in bulk, a ' sheet of wool ' at a time, a draft of 2 lb. per cwt. was deducted from the invoice weight in recognition of the fact that the gross weight of the wool, when weighed in bulk, included the draft of ½ lb. per tod.

In the reign of James II the inhabitants of the Channel Islands complained that two-thirds of the land was out of cultivation, and that they had lost their ships, their traffic and their trading, and they received a grant of wool for the manufacture of stockings—4000 tods being allowed annually to Jersey, 2000 to Guernsey, 400 to Alderney and 200 to Sark. In these grants the tod would be reckoned at 28½ lb.

It will be seen that the total weight of the farmer's wool when weighed by the tod was entered as 66 tods 6 lb. or 1854 lb. but when each sheet of wool was weighed in bulk (FIG. 2), the total (after deducting the *tares* or weights of the wool-sheets) was 17 cwt. 0 qr. 6 lb. or 1910 lb. The difference of 56 lb. consists of 22 lb. of oddments and 34 lb. of *draft*—the term *draft* being used to indicate the sum of all the errors in weighing the 66 separate lots by the tod, using no weight less than 1 lb. which necessarily entailed an excess weight in favour of the merchant exactly averaging ½ lb. per tod.

When each ' sheet of wool ' is weighed separately the weight includes that of the wool-sheet itself (known as the *tare*). When the total weight of the tares is deducted from the gross weight, then the draft (2 lb. per cwt.) is deducted, and finally the 22 lb. of Oddments—the net result is the weight of the fleece wool for which the farmer was paid.

It will be noticed that in FIG. 2 the draft allowance of 2 lb. per cwt. is 34 lb., whereas the ½ lb. per tod draft allowance in FIG. 1 is only 33 lb. The difference of 1 lb. is mainly due to the fact that an allowance of ½ lb. *added to* the tod (28 lb.) is not the same as 2 lb. *deducted* from 1 cwt.

As a result of the greater convenience in methods of transport, most of the wool is now sent by farmers to the merchants' warehouses and is there weighed, sheet by sheet, the old system of weighing by the tod at the farms being now obsolete. One disadvantage of this system of weighing wool is that the farmer is seldom present when the wool is weighed, and the wool is not examined in his presence and therefore any deductions for defects in the wool cannot be agreed at the time they are discovered. By the time the farmer hears of them the wool has been placed ' in pile ' along with that from other farms and he is compelled to accept the merchant's statements as correct. These sources of disagreement were all avoided by the older method of weighing at the farms, when all matters in dispute were settled before the wool left the farm.

So efficient was the medieval method that the writer has personally weighed more than 500 tods in a day, all the wool having been adequately inspected, packed and made ready for despatch to the warehouse. Not a single unnecessary word or figure need be entered in the books and the only calculation consists in multiplying the total weight by the agreed price. The weights ' by the tod ' were net weights, no deductions having to be made for tares (i.e. the weight of sheets) or any other cause and all questions relating to the acceptance of the wool had been settled at the time of the wool weighing.

No other method of weighing and entering wool has all the advantages of this very ancient one, and though it is obsolete nowadays there are merchants and farmers who regret that it has become a mere relic of the past.

The Ancient Village Gods of South India

by James Hornell

THE religious ideas of the illiterate villagers of South India, nominal adherents to Hinduism, are extremely vague, ill-defined and confused. In one respect alone is there general understanding and agreement; this is the universal acceptance of the belief that demon spirits prowl around their homes, ever seeking opportunity to inflict misery and disease upon those who do not adequately propitiate these potential workers of evil. The basis of this belief reaches back into a distant past, antecedent to the influx into the plains of India, through the northwest passes, of those swarms of Aryan-speaking people who brought with them the Vedic cult of the sun, moon and planets, fire, wind and rivers, humanized by anthropomorphic ideology. On entry into India this glorious imagery found itself in conflict with two aboriginal cults strongly entrenched in the religious beliefs of the land. One of these was the worship of gods and goddesses of whom the most honoured or dreaded as the case might be, were those concerned with procreation, the continued fertility of the fields, and with the infliction of epidemic diseases and other miseries. Of these deities we have little precise information but it seems certain that phallic worship, typified in the lingam of Siva, was incorporated in this cult, and that many of the ills that afflict mankind were considered as due to the malevolence of malignant demons and to the jealous hatred of the living possessed by the disembodied spirits of the dead. The other and milder cult native to the soil was the worship of trees and serpents, or rather of the spirits or influences inhabiting them or associated therewith.

To the invaders, who were a pastoral people worshipping their Nature gods with simple ritual, the deities of the aboriginal tribes appeared base and contemptible. In the hymns of the Rig-Veda they are called 'mad gods'; their worship was accounted 'malignant' and 'void of sense'.

In the course of time intimate cultural contact between the two races brought about so much interaction between their respective religious systems as entailed notable and far-reaching modifications in both. Revolutionary indeed were the changes which thereby affected Vedic conceptions. So tenaciously held were the beliefs of the aboriginal people, and so militant their gods that, little by little, the purity of the original Aryan faith became contaminated. The most powerful of the native deities, and in particular their chief goddesses, were able to force their way to recognition by the priesthood of the incomers, and they carried with them rites which were often bloody and revolting. Prominent among these innovations was the worship of the aboriginal goddess Kali, fearful of appearance and avid of blood sacrifice. She was promoted to be the chief spouse of Siva, himself probably the most important god of the ancient Indians.

Similarly, elements of tree and serpent worship became grafted upon the pliant stem of the accommodating Vedic system. These influences, however, were always of comparatively insignificant importance, though the cobra and certain sacred trees were reverenced in all the great philosophic religions that have arisen in India since Vedic times. Alike in Brahmanism, Buddhism, Jainism and in Hinduism, the serpent (cobra) and the sacred tree find honoured place.

As the invading Vedic religion gradually absorbed the more prominent features of the native religions, the latter slowly deteriorated and degenerated into a demon-ridden cult bereft of a recognized and literate priesthood, much the same as that which constitutes the crude religious conceptions held by the unlettered South Indian villagers of the present day. Incidentally it should be added that even in recent times the interaction of the rival cults continues, but today, with the increasing spread of education, the village gods tend to become Hinduized and to be merged into the entities of the recognized gods characteristic of the religion favoured by the high caste strata of Hindu society.

The modified religion, Brahmanism, which emerged from the interaction of Vedic and aboriginal cults became in the course of time exceedingly complex, for, besides taking over certain of the native gods and goddesses, their various attributes were deified under separate names so that eventually they became, in the eyes of the ignorant multitude, just so many separate and independent deities to be added to the host of gods in their pantheon.

In the north, in Hindustan proper, when the Vedic religion of the Aryan invaders ultimately developed into Brahmanism, this modification seems to have been accepted for the time being by all classes with the exception of the hill and jungle tribes who, being little in contact with the urban inhabitants of the plain, were extremely conservative in their religious beliefs and so clung tenaciously to their primitive cult centred in the fear of the spirits of evil and the ghosts of the dead.

In South India, a land where the mass of the people are Dravidians, the story is different. Here, the Aryan element which dominates the North is small in numbers and is represented mainly by the descendants of colonies of Brahman priests who appear to have filtered in from the north primarily in the guise of missionaries. The prestige of their learning, religious and secular, stood the incomers in good stead ; princes and chiefs took them into service as advisers and afterwards as administrators. It was but natural that they took every opportunity to advance their own religious system ; clever and subtle men, it was not long before most of the great chiefs became ardent adherents to the Brahman religion ; vast sums were devoted to the erection and endowment of innumerable temples, often marvels of elaborate and magnificent architecture. The fashion set by the rulers and their henchmen gradually permeated all ranks of the population until, under the influence of the ever-increasing tribe of Brahman priests, the people fell into the fatal meshes of the caste system and became adherents to the new religion.

But the change as it affected the life of the villages, apart from the introduction of caste, was purely superficial. The religious belief of the peasantry and of the non-caste folk continued to be a medley of demon and ghost placation and of tree and serpent reverence, with the addition here and there of some shreds of the aristocratic religion of the higher castes. So formless and inchoate was it, as it still is, that the deities feared and the rites practised for their appeasement often varied (and vary) widely from district to district. At the present day the shrine of the village deity is almost invariably small and inconspicuous ; often mean and apparently neglected except in time of trouble when disease or misfortune afflicts the community. The usual location is on the outskirts of the village, generally in the shade of a few aged trees, a sacred grove. Here is installed the patron deity, usually a goddess, attended frequently by a retinue of inferior godlings who play the part of attendants and messengers. Hither come the villagers to pay reverence and to implore help to free the village from whatever evil afflicts it ; most commonly this is an epidemic of smallpox, cholera or plague ; sometimes it is a shortage of rain or some disease affecting the crops.

Each village possesses its own particular protective deity. Almost always this is a goddess, the Mother or *Amman* of the community. Though called ' Mother ', her attributes are in no wise maternal ; she is indeed the progenitor of the Brahman Kali, and in some instances the Brahman priests in the neighbourhood endeavour to annex her as being indeed identical with their own deity, in exactly the same way as the medieval Christian Church was wont to identify local heathen goddesses with the Madonna and to turn their annual festivals into Church celebrations. The Indian *Amman* goes by many names ; she may be Kaliamma, Mariamma, Durgamma or a hundred other strange names, or she may be localized as primarily the goddess of a particular village, as for example Hosur-amma, Kollapuri-amma, and so on. Some are deities common to the whole village community, feared and propitiated by all ; others belong to one particular avocation. Thus we find fishermen and sailors erecting little shrines on dangerous headlands or at their home port, wherein they instal some shapeless stone, drape it with feminine garments and make a show of daubing the upper end with crude indications of the human features. To this they make vows when in danger and they celebrate deliverance by offerings which usually take the form of the sacrifice of a sheep or a fowl, the presentation of garlands and ornaments and of food ; not infrequently a bottle of arrack is added, the whole of the food and drink being subsequently consumed by the devotees or by him who may act as priest for the occasion. As this worship, though tolerated or rather ignored by the Brahman priesthood, is looked at askance by them, the *pujari* or officiating priest is usually a man of low caste, sometimes indeed one who is without caste and ' untouchable '. Another custom of some fishing and seafaring villagers is the dedication of their boat to the local protective goddess ; this is effected by means of crude religious rites at the launching ceremony and in particular by the painting or incising of ' eyes ' upon the bows ; certain words of dedication were added in the case of the passenger-carrying vessels called *kalla dhoni* which plied in pre-railway days between Point Calimere and the north coast of Ceylon. Similarly the ferrymen using the primitive coracle on the river Tungabhadra, supplicate the protection of the village deities at the beginning of each season's work ; especially do they implore protection against their dreaded enemy, the crocodile.

The village goddess is honoured by an annual festival lasting several days. For the rest of the year her worshippers take little heed of her so long as life flows smoothly, but when misfortune or sickness comes, when famine stalks grimly through the land or if the dreaded scourge of smallpox or of cholera begins to take a ghastly toll of village life, the thoughts of the people, in the usual human way, turn inwards and they bethink themselves of their local deity whom they have been taught to believe has control of the powers of evil which afflict them. Her shrine once again is crowded with suppliants, who fear that in some way or by some neglect their wayward and sensitive divinity has been offended. She is supposed to be angry and as having given expression to her wrath by inflicting hardship or disease. The placatory ceremonies vary within wide limits in different parts of the country ; usually they continue for four or five days, reaching their climax on the last day. In one type of festival the villagers are entertained on the opening day by a procession headed by a professional story-teller who chants songs in honour of the goddess ; those who have made vows are called upon by name to repeat them in public and a sheep is sacrificed before the shrine to seal the promises thus made. Food collected from the different households is taken at the end of the day to the abode of the goddess and there offered to her with due solemnity and ritual. The sacrifice of another sheep usually ends the proceedings on the first day.

More processions with music, singing and sacrifice during the two succeeding days

gradually work up the feelings of the people to that extreme pitch of exaltation necessary for the proper performance of the final scenes of the festival. On the last day everybody turns out to take part in a grand procession headed by dancers carrying on their heads pots of water or of fire and decorated with flowers. The din of tom-toms and the screech of pipes, the vociferous chanting of the story-teller and the frenzied dancing of the pot-carriers and their attendants carry the excitement of the crowd to fever pitch for the concluding ceremony—the slaughter of a buffalo before the shrine; this takes place towards midnight. Amid the clamour of the seething multitude and the thud-thud of the drums, men seize the buffalo by head and body, straining the neck tight. A sword, blessed by the man who officiates as priest, is handed to the executioner, who worships it, bowing to the ground before it; then if skilful, with a single stroke the head is severed from the body. The ritual which follows varies from place to place; always is it blood-besmeared and revolting and the details are best omitted. The underlying motive is always based upon the reasoning that as the deity is wrathful, the more blood that is spilled, the more likely is she to listen to the supplications of her devotees.

Should the epidemic persist, the villagers either consider that the goddess requires further and greater appeasement, entailing the slaughter of a larger number of animals in sacrifice, or, as is not uncommon in some districts, they curse her as having insufficient power to arrest the progress of the epidemic or improve the famine situation as the case may be; abjuring her, they turn to the goddess of some adjacent village where conditions are better, where, if the trouble be disease, it has either not appeared or where it has run its course and has disappeared. In rare instances the more powerful goddess of the fortunate village may be stolen away and installed in a new shrine in the village desirous of her help; generally the villagers are content to construct a new shrine, a mud-walled hut or a mere shack of palm leaves, wherein is placed a decorated stone or even an earthen pot daubed with closely-set dots (a relic of sympathetic magic) in the case of a smallpox epidemic, and stone or pot given the name of the kindly and powerful goddess who has befriended their neighbouring villagers. In an analogous way certain of these village deities have attained a renown extending far beyond the limits of the hamlet to which they were originally attached; in this way a deity may progress from purely local celebrity to become one of the principal goddesses of a whole district or even of a province.

These aboriginal deities are not all cruel and odious in character and attributes, though the tendency is always for an originally mild-tempered deity to develop a liking for blood sacrifice as time goes on. Some, again, who are vindictive and bloodthirsty in one district, may be mild and kindly in another. In the Telugu country in the north of the Madras Presidency, the company of village goddesses called ' The Seven Sisters ' include Poleramma, the goddess who inflicts smallpox when angry, whereas in the Tamil country the smallpox goddess is not one of the seven, who by contrast are kind and indulgent deities, easy to propitiate. Other deities are half saint, half goddess; these originate as the ghosts of women who were benevolent and charitable, worthy and faithful wives, mothers of many sons, and who died before their husbands. The chief object of their worship is to secure offspring, to obtain good crops and to keep away evil spirits. No dread here mingles with their worship and the annual festivals in their honour are light-hearted and altogether joyous.

Identification and comparison of the deities worshipped in different parts of the country are to be effected only at the cost of immense labour, for though the number worshipped in any particular village are few, many are of local origin and are not recognized

away from their home country. This is particularly true of the minor demon-deities and hobgoblins, who though possessed of little power to inflict grievous harm or to cause disease, are yet of so unpleasant a nature that their antics are able to terrify the bravest heart in these simple communities. They are generally the loosened spirits of people who have died violent or untimely deaths. Particularly dreaded are the ghosts of women who have died in childbirth and of people who have suffered extreme injustice while on earth. It is believed that the ghosts of these unfortunates bear a grudge against those who are enjoying a happier time in this life and so return from the grave to vent their spleen upon the living. Wicked people, particularly those who have suffered violent death as a consequence of their own wicked deeds, have a ready entrance into this pantheon of dreaded ghosts.

The Dravidians as a race have a lively fear of disembodied spirits of all kinds and many are the tricks devised to prevent their return after the burial ceremony. One method is to make a hole in the wall or roof through which the body is taken. The opening is afterwards closed so that the spirit may not be able to find its way back into the house. Another plan is for the friends and relatives to return from the burial ground by different paths in order that the spirit may be so confused that it will not follow. To make doubly sure, after the return of the mourners, an outsider often appears, pretending to be possessed by the spirit of the dead man; a substantial present is given to him, so that the spirit may have no excuse for a demand that it should be worshipped. In other instances the footprints of the mourners are swept away in order that the ghost may not be able to track them; their clothes are also shaken out lest the ghost should be hiding within the folds. Sometimes a stone is set up in the path to impede the progress of the ghost-spirit; how or why the people are unable to explain.

These spirits of the dead haunt burning and burial grounds and all desolate places. Certain trees are their especial homes; these are well known to the villagers who refrain from cutting the branches lest the ghosts should be disturbed and come out to work mischief. Smears of saffron are sometimes daubed on the trunks by way of propitiation. There can be no doubt of this being a vestige of the very ancient tree cult.

A particularly powerful demon semi-deity is Isakki, of the Tamil country. She is described as having been the concubine of a Brahman who murdered her on discovering her guilty of a peculiarly wicked act of treachery. She wanders the countryside in the guise of a beautiful dancing-girl, distraught with grief. Young men crossing her path are bewitched and then, having got them into her power, she inflicts endless misery upon them. Young girls also fall victims to her. Her images represent her as eating infants; if we may judge from the quantity of votive offerings lying around her shrines —bangles, winnowing fans and images of herself in clay—and the increase in the number of shrines devoted to her worship, Isakki, in certain localities, appears to be the most dreaded and powerful of all the demon-deities.

It is important to note that the Dravidian village deities are nearly all female. Gods are few and have little importance except in the Tamil country where the god Aiyyanar or Sasta has a shrine in nearly every village. He it is who brings rain in its season; as a rule his shrine is built on the bund or embankment of a tank (water reservoir) or beside an irrigation channel. He is the guardian of the village, master of the whole tribe of demons and ghosts who ever hover around the homes of men, seeking to do them harm. To assist the god in his never-ending task of repelling the enemy, his devotees provide him and his retinue of deified heroes with images of horses and elephants on which to ride during their nightly rounds (PLATES I, II and III). In some cases clay figures of dogs are added, to bay at the heels of the unhallowed crew.

In the Telugu districts, on the other hand, male deities are almost unrecognized in the Dravidian pantheon, the few who are being relegated to the position of subordinate attendants upon the female divinities who usurp the supreme power.

This dominance of the female sex among the village divinities of the Dravidians who represent the main racial element present in India when the Aryan influx took place, is characteristic and is the converse of what we know was the case in Brahmanism and, to a less degree in modern Hinduism. In the latter the supreme deities who divide between them the devotional adherence of the great mass of orthodox Hindus are both male—Siva and Vishnu. It is true that their various energies or active principles, their *saktis*, are deified in the persons of their wives, but this seeming exception is to be explained by the modifying influence exerted upon the orthodox Brahman faith by long and intimate contact with the aboriginal culture of the land, a culture which held mother-goddesses as the most important divinities in its pantheon.

Only under exceptional circumstances do we find a village goddess borrowed from the Hindu pantheon, though it is not unlikely that this is but a transference back to the original source. With one of these unusual occurrences I have been so fortunate as to have first hand acquaintance. Some years ago while camping at Tondi, a fishing village on Palk Strait, the Customs Officer showed me an exquisitely carved wooden image of a Hindu goddess, standing over four feet high. He told me that this had been the goddess of the village from time immemorial, dwelling in a small shrine in the Hindu quarter. It so happens that there is also a populous Muhammadan quarter and that its menfolk bear bitter religious enmity against their Hindu neighbours. Taking advantage one day of the absence of the Hindu fishermen, these Muhammadans had raided the little shrine some years previously. They robbed it of its deity, hacking off the nose in their hatred of image worship and then, taking the mutilated statue some distance to sea, threw it overboard.

Long afterwards the crew of a Hindu-manned coasting vessel when raising their anchor in the port, brought up the image, one arm broken off but otherwise intact, except for the mutilated nose. The treasure was seized from the reluctant sailors, who had the intention of carrying it home to a port in the north of Ceylon and there setting it up to worship in their local temple. Eventually the Customs sold it to me and later I presented it to the India section of the Victoria and Albert Museum where it now is.

The important feature of this incident is the fact that the image, a beautifully carved sculpture in the round, is identical in every detail with lovely small castings in bronze representing Parvati, the consort of Siva, in her mild and wifely form of Gauri, which date from about the early 11th century. Unlike Kali, who personifies the destructive energy of Siva, Gauri-Parvati is a kindly deity, as is indicated in the images here referred to. As described in the Kasyapa-Silpa, an ancient book on Hindu religious Art, her image, when appearing in company with Siva has but two arms, instead of the four when represented independently ; she stands on a lotus pedestal, holding a lotus flower in her right hand, with her left hand hanging down ' like the tail of a cow '.

It is evident from examination of the details of the figure yielded up by the sea, that the image must have been originally a treasured possession of an orthodox Hindu temple devoted to the worship of Siva. How it became converted into the Mariamma of a village shrine and bereft of the ministrations of a Brahman priest, can only be surmised, but the fact remains that a village shrine did annex the image of a goddess of the Hindu pantheon and rechristened her as ' Mariamma ', worshipped with the rites peculiar to the non-Brahmanic ritual of the village gods of Dravidian villagers.

The Serpent Cult

Passing to consideration of the second of the ancient aboriginal cults, we have to note that while the snake has a prominent place in the mythology and religion of many countries, in none is its cult so widely spread and so highly developed as in India, particularly in the southern or peninsular part of that land of diverse races and creeds. The farther we go south the greater becomes its strength till we find it reaching its maximum development among people speaking purely Dravidian languages ; this region comprises the whole of the Madras Presidency, together with the States of Hyderabad, Mysore, Travancore and Cochin.

The worship of the snake is confined practically to one species, the Cobra, that handsome but extremely deadly serpent which is carried about in baskets by snake-charmers as the star performer in their uncanny exhibitions. This limitation is due partly to the mild or rather sluggish nature of the reptile—it is often called the ' good snake ' in Ceylon and South India ; partly to unconscious artistic appreciation of the baleful beauty of its colouring, and of the exquisite elegance of the characteristic attitude which it assumes when excited, erecting its neck vertically from the ground and expanding the throat region into a great ' hood ', inscribed with markings that simulate enormous unwinking eyes connected by a double line.

A habit of the snake family which has contributed to the building up of the cult is the apparent renewal of its youth after the periodical casting of its skin, To the philosophic mind of the Hindu, brooding upon the mysteries of life and death, this, together with the commonly held belief in the great age attained by serpents, suggests ideas of immortality and of periodic purification. Apart from these considerations, the fear engendered of the terrible agony and rapid death following upon its bite is sufficient to cause it to become a creature to be worshipped as being inhabited by a malignant spirit that must be propitiated if danger is to be averted.

In Malabar, Cochin and Travancore, the country of the Malayalis, every well-to-do member of the higher castes dedicates a small area of the ground around his house to be a sanctuary for the holy serpents. This is always situated at the southwest corner ; here bushes and undergrowth and trees are allowed to grow unchecked and rank till they become a veritable serpent grove. To prevent children and cattle from wandering in, the grove is surrounded by a low stone wall. Here snakes are encouraged to dwell in order to ensure freedom for the family from many diverse evils and misfortunes. Leprosy, itch, ophthalmia, the death of young children and the invasion of the house and garden by harmful snakes, are among the many calamities universally believed to follow from any neglect to render proper respect to the sacred serpents or their shrine. The lack of children is another misfortune entailed by any failure to perform regular worship in honour of the family snakes.

That plagues and tribulations so varied and fearful may be averted, periodical offerings of milk, eggs, and boiled rice are made ; if omitted or grudgingly performed, the anger of the snake-gods is aroused and dire calamity befalls the household. An astrologer is called in whenever evil things happen ; very often he attributes them to the wrath of the serpent gods, and advises as a remedy the dedication of another shrine in the serpent grove to appease their wrath and thus regain the favour that has been lost. Such a shrine, or rather votive offering, has the form of a hooded cobra, rudely carved out of a block of granite. Sacrifices accompanied by elaborate ceremonies attend its installation in the grove where it takes its place with other and older snake-stones upon a low platform, held in great sanctity.

PLATE I

A GIGANTIC FIGURE OF A HORSE OUTSIDE A VILLAGE NEAR CUDDALORE, SOUTH INDIA
On this steed the god Aiyyanar rides nightly on his rounds of the village to chase away all hostile spirits
Ph. J. Hornell

facing p. 84

PLATE II

GUARDIANS OF A VILLAGE SHRINE, NEAR CUDDALORE

Ph. J. Hornell

AN ASSEMBLAGE OF VOTIVE FIGURES OF GODLINGS MOUNTED ON BURNT CLAY MODELS OF HORSES AND ELEPHANTS, NEAR ENNUR, NEAR MADRAS

Ph. J. Hornell

PLATE IV

A SERPENT PLATFORM NEAR THE JUNCTION OF THE RIVERS CAUVERI AND BHAWANI, SOUTH INDIA
Ph. J. Hornell

The ground within the enclosing wall of the grove is left virgin and untouched. No sickle may be used to cut down the rank vegetation that springs up so rapidly in a humid tropic climate ; neither spade nor mattock may turn up the earth ; the gods must never be disturbed save when the periodical offerings are made. So intimate is the relationship established between the tutelary deities with the people living in the adjoining house that the gods and their shrines are frequently specified as being intrinsic parts of the property in deeds of transfer. The seller may not take the deities nor their shrines with him ; should there be no serpent grove belonging to the place where he takes up his new residence, he should set aside some ground for the purpose and install there a shrine with all the elaborate ceremonial as required by custom.

In Cochin the cult has a high priest, a Nambudri Brahman ; his house is infested with cobras, said to be harmless to himself and his family. Whenever a snake has to be removed from one grove to another, the high priest alone may be employed on this task. Frequently so thick and forest-like is the jungle that has grown up in the grove that trees have to be cut down in the search for the snake ; all such timber is sacred and must be given to the local Hindu temple to be used as fuel—another instance of the curious way in which an aboriginal cult has come into some form of relationship with orthodox Hinduism.

In the Tamil country the people do not form family serpent shrines of the type described ; instead, the local temple authorities or some pious individual may construct what is virtually a communal shrine-platform where anyone afflicted by any misfortune is free to dedicate a votive stone to the serpent deity (PLATE IV). In this land the special boon desired by the devotees is the gift of a child. To be barren is the greatest curse that can afflict a married woman in India ; to gain the goodwill of the powerful serpent god the childless woman makes offerings at the orthodox Hindu temple nearby ; then, to make doubly sure, she resorts to the serpent shrine, a low, stone-faced platform built around a pair of sacred trees—the pipal and the margosa ; here she washes certain of the older votive offerings, stone images of the cobra in various attitudes of which the most favoured are those representing a pair of snakes in congress ; she pours out libations of milk and curds, garlands them with flowers and makes other offerings according to her means. Should she have vowed to present a snake-stone to the god if he granted her prayer, then if her desire had been gratified, the happy mother installs one more stone in any vacant spot among the crowd of older stones already in place. All are placed to face the rising sun.

The object sculptured upon these votive stones varies greatly, influenced by local fashion, tradition, or, sometimes, by the artistic bent of the sculptor. In some shrines which I have visited, a single cobra is carved upon many of the stones, sinuously upright upon its tail. Mostly it is single-headed, but a few are ' five-hooded ' as it is called, though in reality the snake is shown with a single broad hood surmounted by five venomous-looking heads, ready to strike. Curiously enough, in Hindu mythology female snakes are distinguished by one head only.

In others, and these are reputed to be particularly efficacious in dispelling barrenness, the sculptured image is of two snakes in congress, twined around each other in the attitude familiar to us in the conventional representation of the Aesculapian rod, held in the hand of the Father and God of Medicine. One or other of the greater Hindu gods is often added in the form of a small carving between the upper curves of the pair of twining snakes.

Still more elaborately sculptured snake-stones are to be seen on sacred platforms outside those famous temples to which many thousands of pilgrims resort annually

from all parts of India. Here, besides stones of the types already described, are many where the five-headed hood of the snake emerges from a spirally coiled body. In the shadow of the protecting hood an image or a symbol of a Hindu deity is carved ; most frequently it is the lingam of Siva.

These serpent-shrine platforms are usually situated outside and behind an orthodox Hindu temple, and are recognized by the priests as belonging to an associated and tolerated cult. Because of this, a little figure of a bull, Siva's vehicle, is often set up near the front of the platform, facing the confused mob of snake-stones, among which is occasionally to be seen a fairly large-sized image of Ganesha, the elephant-headed god of good-fortune.

The holy trees that afford shade and protection to the snake-stones consist of the Sacred Fig or Banyan, the *Pipal*, and the pretty pinnate-leaved Margosa or Neem-tree. When planted together they are married to one another by a Brahman priest with almost precisely the same ceremonies as are usual at the wedding of a man and woman of high caste. The pipal represents the female, the margosa the male, in this strange ceremony, a vestige of the ancient tree-cult.

In the Deccan worship of the living snake is more important than devotions offered at sculptured shrines. An annual snake festival takes place during the rainy season, when Hindus either worship snakes brought to them for this purpose by snake-charmers, or, preferably, seek out a place where a snake has made its home. This is often within an anthill. Having found a snake's hole, the worshippers plant sticks around it and wind white cotton thread in and out among them. In the Mahratta country a company of women will visit a snake's dwelling ; joining hands they circle round it five times, singing songs. At the end of these gyrations they prostrate themselves on the ground to show their reverence and respect for the snake. Afterwards an offering of milk is poured into the hole—in place of pouring it into the snake's mouth, garlands are festooned around it and a mixture of sugar and flour is sprinkled on the ground.

A few temples dedicated exclusively to a snake god also exist. Both at Bilsapur and Chhatisgarh in the Central Provinces is a temple where the only image is that of a cobra ; it is significant of the origin of the cult that in each town the snake temple is the most ancient of those there existing. Most famous, however, of all snake temples is that at Nagercoil, near to Cape Comorin, the southernmost point of the peninsula. The shrine there contains many stone images of snakes ; worship of these placates the snake-god so effectively that, in the universal belief of the people of this locality, no snake bite will prove fatal within a mile of the temple.

This snake cult is distinct from that of the village deities, worshipped with blood sacrifice and with ceremonial presided over by non-Brahman priests. Strange as it may seem worship and propitiation of serpents are tolerated and even recognized as praise-worthy by the Brahman priesthood who, indeed, reverence the serpent in common with the worshippers of village gods.

Although the serpent makes an appearance in Vedic mythology, its worship as a specific cult was limited to the Dravidians, and other ancient peoples whom the Aryans drove southward and to the hills and jungles when they invaded India. It could hardly be otherwise for nowhere are there so many kinds of snakes, nowhere are the venomous kinds so numerous, and nowhere is the snake population so immense as in India. Thousands of men and women lose their lives annually from snake-bite and this alone would cause a spirit-ridden race to erect the king-snake into a deity, to be propitiated and made much of, in order that he may be graciously pleased to protect them from the attacks of his subjects. Insensibly, as the Aryans and the Dravidians mingled their blood and

blended their customs, some of the deities and religious rites of the old inhabitants became incorporated, often in almost unrecognizable form, in the religion of the dominant race as has already been explained. The influence of snake-worship is one of the best examples for we find it potent in the mythology of all the philosophic religions that have flourished from time to time in India. In Brahmanism gods and demons churn the ocean with the aid of the world-supporting Sesha ; in Hinduism we find Vishnu reclining on Sesha, five or seven-headed, as on a couch ; Krishna dances with a five-headed cobra, his right foot upon its head while the tail is held in his left hand. As Adisesha, the serpent god assumes a semi-human form ; one of the sages, Patanjali, has a serpent body, and representations of serpents are sometimes worn as jewellery on images of the gods. Did space allow these instances could be multiplied a hundredfold.

The serpent cult is as closely associated with Buddhism, particularly in the rôle of snakes acting as guardians of trees and springs. Extremely common are representations of the Buddha resting beneath the towering hood of a many-headed and gigantic cobra, and of serpent forms engaged in worshipping trees or rather of the spirit of the Teacher dwelling therein. In Buddhist art the hooded serpent is one of the principal and most popular motives of sculptor and painter ; its value for architectural effect is best seen in Pnom-penh, the ancient capital of Cambodia, where it is much favoured as a design for gateway pillars and ornamental posts, often of gigantic size.

Some Berkshire Interlacings

by Allen W. Seaby

WHY Berkshire? Well, any other county might have been chosen; that in Berkshire there are both the Romano-British city of Silchester and the ruins of an abbey founded in Norman times may have influenced the choice. As for the last word of the title, 'interlacings' will be confined here to a pattern of curved strands. This rules out such motives as the zig-zags of the filigree on the handle of the Sumerian dagger and the Coptic meanderings of one strand only.

There are, of course, many examples of interlacing to be seen nowadays. Men criss-cross their shoe-strings, unless they have been taught to lace them straight across as they do in the Army; a basket is made of interlacing canes; a hurdle of interlacing wattles; women formerly interlaced the strands of their long hair and the manes and tails of horses are often treated similarly. A cane carpet-beater is an excellent example of interlacing. The 'under and over' of the canes make for both strength and resiliency. The implement is remarkably attractive in appearance, an instance of the combination of the arts of necessity and of form.

Examples of interlacing occur early in ancient times. Without making the claim that they are by any means the first, the Sumerian clay votive tablets may be instanced (fig. 1). On them is a pattern of four interlaced circles, a symbol it may be supposed of eternity—no beginning no end. The Assyrians repeated the motive as an ornamental border, which in course of time was adopted by the Greeks. The Greeks, although not a specially inventive people, yet had a talent for enhancing and perfecting the motives which they acquired. They doubled and tripled the border of circles, which in their hands became what architects call the guilloche. The craftsmen painted it round the handles of vases and carved it on temples. Fig. 2 is from the base of the columns of the Erechtheum, the triple porched-temple in the shadow of the Parthenon, and the most elaborately ornamented of the Greek fanes. There is a cautionary story to tell concerning this base. A good many years ago a book on the history of architecture was issued, one of the illustrations being of the base in question. In the British Museum is an actual column, of Pentelic marble, torn from its setting, and a draughtsman was sent to make a drawing of the base. It will be readily understood that the bases of columns are specially liable to injury. First there is erosion caused by the weather. Then, too, the open loggias formed by the external columns of the temples were pleasant resorts. On the acropolis of Athens, above the noise and dust of the city, besides welcome shade, were light and air, and one of the world's most famous views, that of the gulf of Salamis, the blue sea with the mountains of Greece for background and, nearer, the purple islands of Aegina and Salamis with the port of the Piraeus occupying the centre of the picture. So it may be imagined that the base of the column had suffered some wear and tear. Little Greek lads may have played around it; Socrates, while discussing matters of high philosophy with his disciples perhaps set his foot upon the base although, as he went without sandals in all weathers, he could have done little or no harm to the carving. At all events, the guilloche in the British Museum specimen has lost the sharp edges of its curves and the draughtsman, above mentioned, thought that he was looking at a straight-lined plait, such as is seen on Roman mosaic borders, and drew it so. Those who know

the ways of publishers will not be surprised to learn that this erroneous illustration was used in other publications. Thus is error perpetuated, to the confusion of students.

The Greeks never used such a plait as part of their stock of ornamental motives; they confined themselves to the guilloche. They knew about plaiting for the long hair of the bronze god, dredged from the sea off the island of Eubaea in 1928, is plaited (FIG. 3). The plait is of five strands, known, nowadays, as the Greek plait.

The story of the illustrator's mistake is to the point because in Roman times the guilloche was transformed into the plait. On the mosaic pavements from Silchester, now in the Reading Museum, are to be seen borders composed of plaits. Seeing that Roman art took its motives wholesale from Greece it seems odd, at first sight, that the plait should take the place of the guilloche. How did the change come about? It must be remembered that slave labour was largely employed in the building of Imperial Rome. Trajan, for example, brought away numbers of Dacians as captives. So it may be supposed that these barbarians, possessing no knowledge of classic forms, but skilled in basketry and the plaiting of leather, made their own version of the guilloche. On the mosaics are three and four-cord plaits, the first instances of interlacing in Britain (FIG. 4).

Continuing with examples of interlacing from Berkshire, two Saxon brooches from Abingdon may be cited, one in the British Museum (FIG. 5), the other in the Ashmolean at Oxford. They are of Kentish type and so alike in style that they may be the handiwork of the same craftsman. Both have cloisonné decoration, the numerous cells being filled, not with enamel, but with glass jewels, a form of ornament which may have been derived from the practice of the Visi-Goths, emigrants from the Ukraine. Both brooches have five bosses, which divide the remaining space into eight compartments filled with filigree. Filigree is wire bent into patterns and soldered on to a base. Wire is, or was, much used in jewellery and there are many ways of employing it. The wire in the British Museum specimen has been embossed, a sufficiently delicate and tedious operation, one would suppose, when done by hand, as it must have been in those days. The craftsman filled his tiny spaces with four-cord plaits, accurately executed. He did more. With a dextrous twist of his pliers he formed a head, eye and beak. What had been a neutral pattern came to life; a bit of wire was transformed into an interlaced animal, that constant motive of the period. It is not the purpose of this article to trace the development and variations of the interlaced animal through the centuries—a tangled skein which many archaeologists have essayed to unravel. Did the animal precede the interlacing or vice-versa? Or were the two entirely separate in their origin and development?

Sometime before A.D. 600 an innovation in the design of interlacing enormously stimulated the craftsmen. An early example of this innovation is to be seen on a cross of thin gold plate, found in the grave of a Lombard chieftain (FIG. 6). The cross was ornamented, not with filigree, but by beating up from the back and, like the Saxon brooch, is decorated with a four-cord plait. This one, however, is different. The interlaced animal of the brooch in the British Museum is a single length of wire; its course can be followed from head to tail. On the cross the plait *breaks* twice. There may be earlier examples, but this seems to be a tentative and rather clumsy effort. The craftsmen soon became alive to the possibilities afforded by breaking the plait and made full use of them, on the carved crosses, in the manuscripts, and in metal, so much so that there arose a school of interlaced design which, on its own lines, has never been approached; it stands alone in the history of ornament.

Leaving Berkshire for the moment, it may be useful to examine the work of this period at its highest peak. Although not so early as some other examples the so-called Tara Brooch found on the seashore near Dublin and dated about A.D. 800 is unsurpassed

Fig. 1

Fig. 2

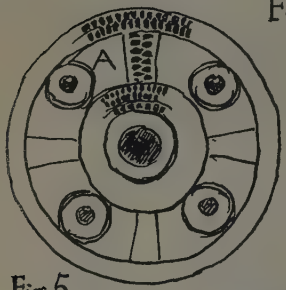


Fig. 5

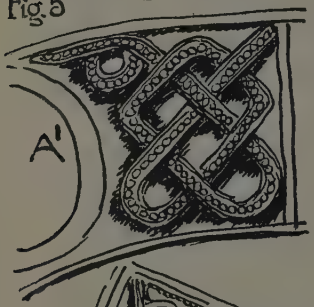


Fig. 3

Fig. 4

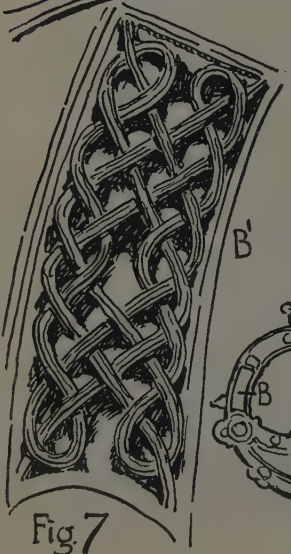
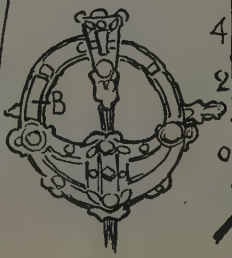


Fig. 7



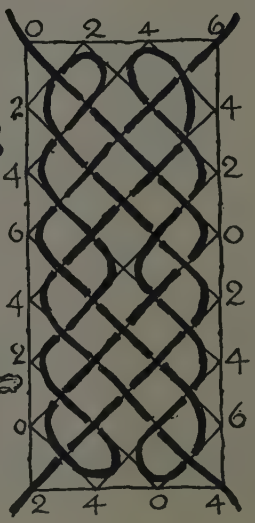


Fig. 8

Fig. 9

Fig. 6

Fig.10

Fig.11

Fig. 14

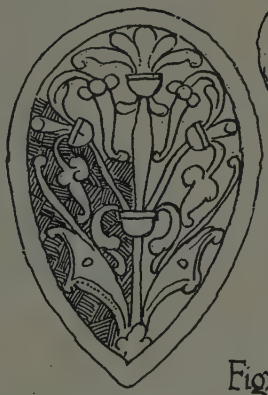


Fig.13

Fig.15

Fig.12

Fig.16

for beauty of design and impeccable workmanship. Pennanular brooches are still in use south of the Mediterranean and as far east as India. Our soldiers in Tunisia must have noted that every native woman wears two, of base silver. Straps brought over the shoulders from the back are fastened by the brooches to a breadth of material in front, forming a sleeveless blouse. The Tara brooch, besides figure-work, mostly of monsters, has numerous panels of filigree. FIG. 7 is an enlargement of one of them. Romily Allen, in his *Celtic Art*, has shown how such plaits can be designed. They are based on a trellis-like construction. FIG. 8 in diagrammatic form sets out the method. The panel being a six-cord plait, that number of divisions is marked off along the top. In drawing the trellis the alternate divisions only are used. In this case the numbers are 0 2 4 6. With only three breaks the pattern is sufficiently complex and eminently satisfying in its mixture of straight and curved lines. It will be noted that a strand of wire projects from each of the corners. Here, this was an advantage, the craftsman making use of the loose ends, but on the manuscripts and especially the carved crosses the strands might be required to finish within the limits of the panel. FIG. 9 suggests a variation of the Tara brooch motive, avoiding the loose strands. This is done by selecting the *odd* numbers, 1 3 5. It is, of course, understood that in designing a plait an even number of strands is invariably used.

The Northumbrian and other crosses afford many fine examples of interlaced ornament, but the penman could trace on his parchment even more complicated patterns. On every page of the Book of Kells are seen elaborate interlaces and the Durham Book or Lindisfarne Gospels, in the British Museum, in a less ornate but more stately and closely knit style, carries interlacing to its culminating peak. One can only marvel at the orderly mind of the scribe who could set out with such firmness the geometry of the spaces while looking forward to the amazing intricacies of the interlacing which was to fill them. Close scrutiny of the great book, as it lay under its glass case in the annexe of the King's Library before the war, revealed the tiny pricks of the compass and the faint construction lines made by the ivory pencil.

So it is obvious that constructive planning and its geometry had no terrors for the old craftsman. The maker of filigree had no such aid ; he had to do the planning in his head as he proceeded with his task. His tiny round nosed pliers was all he had to draw with and it is marvellous how with that implement he could produce such complicated ornament, and keep it true to the imaginary construction.

A worked bone in the British Museum suggests that for workers using graver or pen there was a constructional short cut, enabling an experienced craftsman to dispense with the elaborate trellis (FIG. 10). The longest panel on the bone (A′), it may be supposed, was set out by the master craftsman, who measured the distances along the top and bottom borders and drew the oblique lines which seem to be a kind of shorthand for the more detailed trellis shown in FIG. 8. The apprentice then took over the exercise and bungled it, as he did the other attempts. Finally he set his teeth and firmly incised the interlaced square at the right, only to fail again for none of the straps connect except the circular one (B′).

What has Berkshire to show against the Sutton Hoo finds, the Tara brooch and the other fine examples in stone and on parchment ? If the Thames had taken a curve slightly to the east instead of to the west, so as to include Taplow, there would have been something fit to stand with the best, for at that place was found the magnificent treasure of buckles and drinking horns, the pride of the Anglo-Saxon galleries in the British Museum. FIG. 11 shows the construction of the interlacing on one of the buckles. On this tiny space the craftsman has arranged his wire-work skilfully and the diagram

reveals how closely he conformed to the trellis construction. However, to vaunt these buckles as Berkshire trove would be enough to make a Bucks archaeologist foam at the mouth. In compensation for the buckles it may be pointed out that Berkshire possesses something rare in the south : in the church at Wantage (birthplace of Alfred the Great) is the fragment of a cross with elaborate interlacing (FIG. 12). Some Berkshire archaeologist might do worse than attempt a restoration of this cross.

At sight of FIG. 13 it might be asked why a sketch of the back of the Alfred Jewel (doubtless worn in Berkshire by its owner), is inserted here for it bears no interlacing. That it does not is somewhat surprising : it might well have been expected that interlacing would enter into the design for although long past its peak of achievement, it was still commonly used. The design is worth scrutiny ; here is none but floral forms, of classic style. The pattern, if adapted to a rectangle and carved on a pilaster, would pass in Rome or Florence without comment. Indeed these symmetrical curved stems look much like the ' free-hand copies ' used formerly in drawing classes, the pupil, struggling to get both sides alike, being supposed to absorb the principles underlying the design of renaissance ornament.

It is much to be deplored that Professor Baldwin Brown did not live to give his promised description of the jewel, in his monumental work, *The Arts in Early England.* How is this unique design to be accounted for ? It may be assumed that Alfred, being a devout Christian, set his face against the use of a motive which had associations with the pagan interlaced beast, on something for his personal wear.* Again, he had been to Rome twice, although only as a child, on the second occasion being presented to the Pope. These visits make it clear that there was then much communication between England and the Holy City. A hundred years earlier, Charlemagne had drawn on Byzantine art for the decoration of his palace so Alfred may have had a renaissance of his own and one more classical in character. Support for this view comes from Wallingford where a fine sword-hilt was dredged from the Thames, sometimes claimed as of Danish origin (FIG. 14). Bands of silver have been let into the hilt, these being decorated in niello, which is an alloy of lead, silver and copper, sulphur being added while the metal is in a fluid state. When cold the alloy is crushed to powder and forced into the cavities of the design, which have been made in the silver. The silver is then heated, so that the alloy becomes incorporated with it. Lastly the surplus niello is scraped off and the surface polished. A richly decorative effect is produced by the contrast of the gleaming silver with the black niello and the process allows all the delicacy with which the graver has been used to be shown. On the silver bands, let into the hilt, besides some interlacing, are forms distinctly floral in their radiating curves and obviously classical in origin. Certainly, no pagan Danish craftworker had a hand in the making of this hilt : only a Christian warrior wielded it. Such a magnificent weapon must have been the property of at least a prince ; and one is tempted to claim it for Alfred himself. Unfortunately for this suggestion, while the Danes were being opposed at Wallingford, the king was in the west, struggling with another body of the enemy.

FIG. 15 represents a small bronze-gilt plate in the British Museum, described as ' from Berkshire '. It illustrates a phase of Viking Art, the Ringerike style. This again might be styled a renaissance for many of the Northerners were becoming Christianized. Foliated scrolls were substituted for the animal forms, as in this example. Like the engraving on the Alfred Jewel, its scroll finishings look strangely classical.

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* The pagan interlaced beast is, however, common in the Lindisfarne Gospels.—ED.

Lastly, there is Reading Abbey. That great foundation, the work of Henry I, who was buried there, is perhaps the most pillaged and mournful ruin in Britain. The church was of great size, more extensive than that of Westminster Abbey. No doubt the king saw that it was well-equipped with carving in stone and wood, vessels of gold, embroidered hangings and all the appurtenances of a great Norman shrine. After its dissolution the place was used as a quarry until it was reduced to its present condition. Nothing remains of the great church save a portion of the south transept and of that, only the rubble core, for the whole of the wrought masonry, inside and out, which faced the six-foot walls, was torn away. The visitor, unless he knows Winchester and Romsey, may find it hard to imagine what the abbey looked like. And vandals still exist in Berkshire. Some years ago a quantity of the abbey masonry came to light which might have been used to face at least a few square yards of walling, but before anything could be done about it the whole, comprising many carved stones, was dumped into a pit and a factory built over it. Fortunately a few stone capitals, of minor size, have been found, some being in the Reading Museum while others have been combined to form a font in the church of St. James, built within the abbey precincts. Nearly all of these capitals bear interlacing ornament, a faint reminder of what has been lost. One of these has its abacus ornamented with a three-cord plait of formal style, but the remainder reveals a very different spirit (FIG. 16). Here is no dead regularity as in the crosses, manuscripts and metalwork of three centuries earlier. The carver was not concerned with symmetry : he introduced a different motive into each of the two main curves. It looks as if he had so many ideas crowding on him that he did not need to make both sides alike, an expedient so often used and a necessity in some crafts, as weaving. The sides of the capital are different : on the right is a diminutive warrior fighting with a monster. The main curves of the face of the capital certainly interlace but without formality ; they writhe with a vigour that suggests life. They *are* alive for they bear foliage, of a sort, obviously the forerunner of the next period, the Early English. The stems—they are no longer straps —are striated like the branches of an actual vine. That is to say the old devil beast of pagan times has been transformed into the tree of life, the true vine, as it was on the Northumbrian crosses.

Life in Anglesey 2000 years ago*

An Early Iron Age Discovery

by Sir Cyril Fox, F.B.A., P.S.A.

A COLLECTION consisting of some 90 objects of bronze and iron which touches life and art in Celtic antiquity at more points than any deposit hitherto found in Wales was discovered in 1943 a few miles from Holyhead, Anglesey. It has now become the property of the National Museum of Wales at Cardiff, the principal donor being Mr Evan R. Hughes, of Holyhead.

The collection includes weapons—fragmentary swords and daggers and spears; indestructible elements of vehicles—iron tyres, nave-hoops, bollard and linch-pins; and of harness—terrets, loop and numerous bridle-bits; things of social and economic interest—gang-chains for captives, currency bars, sickle, and fragmentary cauldron (or waterclock); of ceremonial interest—the central portion of a bronze trumpet, a wand of ash-wood decorated with spiral bronze ribbon; *personalia*—the bronze mounts of a wooden casket. All the objects were found in peat; many were deeply stained with vivianite, being associated with animal bones—of horse, ox, pig, sheep and dog.

The limiting dates of the objects comprising the deposit, provisionally assigned, are 100 B.C.–A.D. 50. Thus it covers the most brilliant phase of prehistoric Celtic civilization in Britain. Some of the objects, the fragment of a trumpet, one bronze horse-bit, and possibly one iron spear—a terrible weapon with a 2 ft. blade—are of Irish origin. They reveal, for the first time, that export of metal-work of the finest quality, a feature of the Bronze Age and the Bronze-Iron Transition, continued (on a reduced scale) into this later period. The majority of the finds, however, are Lowland British work of craftsmen working in the Marnian (Iron Age B) tradition or the Belgic (Iron Age C).

The bridle-bits, presenting a striking variety of types and techniques, illustrate the nature of the whole assemblage more clearly than any other single group. We are studying, not a creative centre of art or craftsmanship in Anglesey, but the range of acquisitions possible to a wealthy family or dynasty of chieftains, at a focal point in the Highland zone of Britain, accessible to travellers and traders from all parts, by sea or by land. Repair work on one bridle-bit, an unwelded iron link, shows indeed that the blacksmith, whom we may fairly assume to have been attached to this settlement of the Celtic Heroic Age, practising what was the basic craft of the La Tène culture, could only carry out the roughest sort of job.

These bits are all snaffles, of two-link and three-link types, suitable for animals of the pony class. Several are of iron, bronze-coated, made in eastern Britain; two, probably made in the Thames Valley, have links of solid bronze, but the rings are hollow, like

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* By permission of Sir Cyril Fox and the Editor of The Times we are able to reprint this article, published 7 March, on the great discovery of Early Iron Age objects in Anglesey. In intimating that there would be no objection on the part of the Council of the National Museum of Wales, Sir Cyril asks that it should be known that a monograph on the deposit is in preparation and will be published by the Museum.

The Editor of The Times also gave permission for the Editorial note.

curtain rings; while one, a two-link bit which should derive from some workshop in the southwest, is of solid bronze throughout. These variations seem to reflect a steep rise in the price of Cornish tin and Irish copper, or of the alloy, as the raw material passed from merchant to merchant, from the Bristol Channel coast across the uplands and down the Thames Valley to eastern Britain.

The bit illustrated has features of special interest. It reveals a plastic design which, taken as a whole, is new to Celtic art-history in this country. The variety of its mouldings is well shown in the photograph; but for the delicacy and finish of its workmanship to be appreciated it must be seen. The appendage (a hollow disk) attached to one link-collar carried a stud of some brilliant material; such unilateral ornament shows that the bit was designed for a two-horse vehicle, in fact a chariot. It is indeed the best evidence which the collection affords for chariot warfare in Anglesey.

Among the objects ornamented in relief were three small rectangular panels with 'S' scrolls, and a lunate plaque; the latter, which may be a trumpet frontal, shows a triquetra balanced but asymmetrical, in a circle flanked by large lobes. This design, abstract, accomplished, inhuman, but strangely attractive, is very characteristic of Celtic art in Britain.

The bollard or pole-tip, a heavy but finely modelled bronze casting which was one of the metal fixtures of a wheeled vehicle, has, on the diaphragm which closes its top, a swastika delicately stippled—swastikas similarly shaped are framed in red enamel on the famous Battersea shield in the British Museum.

The series of moulded 5-inch rings of bronze, identified as nave-hoops, are decorated successors of the strong bands of iron whose function it was, and is, to prevent the hub of the wheel from splitting; they range from a fairly heavy casting to light bands of sheet metal.

The 'currency bars', 19 inches to 2 ft. long, pose a pretty problem of function. Such bars, which were probably made of Forest of Dean iron, circulated in southwest Britain, mainly in the first century B.C.; their identification with Caesar's *taleae ferreae*, iron slats of fixed weights, though criticized, still holds the field. Now the four specimens from Anglesey are over 100 miles from the grouped pattern of earlier finds; was such 'money', circulating as no doubt it did at its intrinsic value, acquired merely to provide raw material in a convenient form for the household smithy? Or did the Anglesey chieftains acquire currency from, say, the Dobuni of Gloucestershire to pay for their purchases in the south?

Striking objects are two gang-chains, each for five captives. One was used in 1943 by a tractor driver to pull lorries out of the mud, which is a remarkable testimony to the quality of the raw iron and of the workmanship put into the welded links. The specimens of such chains hitherto known are from Kent and Cambridgeshire, in associations indicative of the last half-century before the Claudian conquest, so the credit for such fine work should probably go to Belgic smiths. The method of use is ingenious. The end ring, having been fitted to the first victim's neck, was locked by passing the whole chain through a pear-shaped loop, slotted through the hinged half of the ring; this process was repeated for the next three. The last ring, each half of which ends in two small loops, was probably linked to a light guide-chain.

We can, combining fact and inference, sum up and conclude the story of the find by saying that a family or community of wealth and influence, with connexions oversea as well as in the Lowlands, dwelt on the margin of a little Anglesey lake for a century and a half. The most flourishing period of this community was probably *c.* 75 B.C.–A.D. 25. Into the lake kitchen refuse was thrown while it was slowly silting up with peat.

PLATE I

CELTIC ART FROM ANGLESEY

Bridle-bit, bronze, 11·5 inches in length ; probably made in southern Britain in the late 1st century B.C.

Ph. National Museum of Wales

facing p. 96

CELTIC ART FROM ANGLESEY

Portion of embossed bronze plaque; probably made in eastern Britain in the early 1st century A.D.
It is here enlarged, the cartouche being 3·8 inches in width

Ph. National Museum of Wales

On the other hand, the household goods, warriors' equipment, and stable movables, of which a proportion has been recovered, were doubtless deposited at one time, on top of the bone heap under the water. But why was this done ? Who throws away the wrought iron of wheel-tyres, some quite new, and others capable of being reworked into other serviceable objects ? Who, in prehistoric Britain, would throw away perfectly good sets of slave-chains ? Who, to close this rhetorical catalogue, would cast into the lake wands of office or horse harness ?

Voluntary elimination of the entire contents of a richly furnished steading being unlikely, what remains ? Destruction during battle, or after victory. Some of the military equipment has certainly been in the wars, as witness sword-cuts on the bronze bollard, the trumpet sheared across, broken swords, and a spear twisted and bent. The clean-cut close of the occupation, excluding all transitional Celto-Roman objects, fixes the date in the mid-first century A.D. The occasion may have been that so vividly described by Tacitus, when Suetonius Paulinus and his legions fought in Mona against Druids, their clients and household warriors, and the refugees from Lowland Britain east of the Fossway who helped them.

'The Times' Editorial

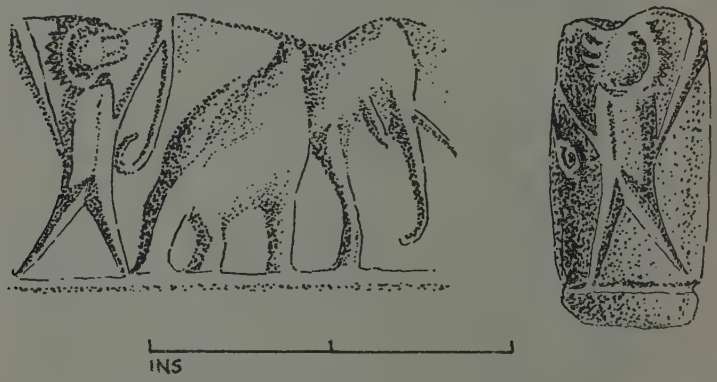
On another page this morning Sir Cyril Fox, Director of the National Museum of Wales, describes one of the most remarkable finds of pre-Roman antiquities that has yet been made in the Principality or, indeed, in all the island of Britain. The tale of their finding cannot yet be fully told ; it is enough to say that military activities were the occasion of the discovery of a great number of objects of peculiar antiquarian interest and often of great artistic beauty which might otherwise have remained in the depths of an Anglesey peat-bog until the end of time. Apart from their unusual character, and diverse origins the circumstances in which they had been cast into a shallow lake which became silted up by the encroaching peat aroused abundant speculation. This was no hoard. The mass of ornaments, weapons, parts of war chariots, trappings of horses, and slave chains, extracted from beneath many feet of peat, had been thrown into the lake. Snapped blades, twisted spear-heads, and the absence of gold or silver ornaments told their tale. They had been flung into the lake by some victor resolved to leave the conquered nothing on which they might look with pride.

The blow had been final. At Maiden Castle, where the legionaries had stormed the ring fortress and massacred the Britons who could not escape in time, Dr Wheeler found abundant evidence that a period of transition marked by the use of Roman and British goods had followed the storm, until the dwellers on the hill had been compelled or persuaded to descend to Roman Dorchester. In this part of Anglesey the new Roman order clearly made a complete breach with the past. Something more than military repression must be invoked in explanation of the unusual destructiveness of the conqueror and Sir Cyril Fox connects the spoiling of these household treasures with one of the most savagely picturesque incidents in the story of the British struggle against Rome. Tacitus has described with all his concise dramatic power how the troops of Suetonius Paulinus who had crossed the Menai Strait were opposed by a host of islanders, their numbers swollen by diehard refugees, their fanaticism excited by women ' in robes of deathly black with dishevelled hair ' brandishing torches, and by Druids invoking the vengeance of their gods on the invaders. For an instant they quailed, then rallied, cut down all who opposed them, ' enveloped the enemy in his own flames ', and made an end of Druidism and human sacrifice in Mona.

Notes and News

A CYLINDER-SEAL FROM SOUTH INDIA

A recent discovery in Hyderabad State, Deccan, is so remarkable that it seems desirable to draw attention to it in a more widely known and accessible journal than that of its original publication. The State Archaeological Department has conducted relatively large-scale excavations at an ancient site near Maski, and in one of the brief interim reports a cylinder-seal of terra-cotta engraved with a man and an elephant is described and illustrated by photographs from which the figure is drawn (1). The Maski site has yielded numerous stone axes and a large quantity of long chert blades and cores similar



to those known from the Harappa Culture, but their stratigraphical context, if any, is not indicated in the very unsatisfactory report. In the main the earliest structures so far excavated on the site seem to belong to the Andhra dynasty (1st–2nd cent. A.D.) and are broadly comparable to another site in Hyderabad State, Paithan (2), where the early levels contained brick buildings, a street drain and wells curiously reminiscent of Harappa but dated to Andhra times by coin finds actually in the drain. In addition to the uncertainty as to the prehistoric occupation of the Maski site, the cylinder-seal was found on the surface. There is therefore no dating evidence from associations and we have to fall back on stylistic criteria.

The cylinder-seal is such a specialized type of object that it seems hardly likely that the Maski find represents a local Indian invention equivalent to, but quite independent of, the great Mesopotamian cylinder-seal series. On the other hand it is not easy to see how Sumerian or later allied influences could have come to affect the Deccan, nor at what precise period. The Harappa Culture has produced three cylinder-seals engraved with Indian rather than Sumerian motifs, all found at Mohenjo-daro (3); outside India

[1] *Annual Report, Arch. Dept. of H.E.H. the Nizam's Dominions*, 1936–37, p. 15 and pl. XIII(*a*).

[2] ibid. pp. 39 ff.

[3] E. Mackay. *Further Excavations at Mohenjo-daro* I, p. 344.

four have been found in Elam and Sumer (at Susa, Ur and Tell Asmar (4)), and one possibly of Indian workmanship or inspiration at Hissar in Iran (5). The Mohenjo-daro seals are from the upper levels; that from Susa is probably Akkadian and that from Tell Asmar certainly of that date. The dating of the Hissar III stratum which contained the cylinder-seal is still under discussion, but an Akkadian or even later date seems not improbable. On the whole therefore the introduction of the cylinder-seal idea to India (where it obviously never proved popular) was not earlier than the middle of the third millennium B.C., and the presence of an actual Sumerian cylinder-seal at Herat in Afghanistan, dated by Sayce to the IIIrd Dynasty of Ur, would fit in with this evidence (6).

In itself the Maski seal is not an impressive work of art, both the man and the elephant he is driving being very roughly portrayed. Stylistically neither figure resembles Harappa workmanship; the elephant is a poor sloping-backed creature unlike the sturdy Harappa beasts, and one may perhaps see an indication of the two types of draught elephants commented on by Mackay (7): the flat-backed stocky Komooria Dhundia (as on the Harappa seals) and the inferior Meergha with its long legs and sloping back, seemingly represented on the Maski seal. One point is however of interest and that is the curious 'radiate' headdress of the man, which is paralleled by that of the human figure grappling with two tigers on a seal from Mohenjo-daro (8). This scene, with its affinities to the Sumerian representations of Gilgamesh, might be used as another pointer for an ultimately Sumerian origin for the Maski as well as the Harappa cylinder-seals, and there is one additional point: the groove at the base (and probably originally at the top) of the former. This feature occurs on the cylinder-seals in Indian style from Susa and Tell Asmar, and Frankfort has commented on it as a feature not normal to Sumer and perhaps to be associated with India (9).

Our enquiries have not taken us very far, and the Maski seal must still remain something of an enigma. Possible points of contact with Sumer via Harappa have been noted, but we have not yet any reliable evidence for a South Indian prehistoric culture contemporary with or immediately subsequent to that of Harappa. To such a culture the Maski seal may be the first clue, but the possibility of a freak independent invention of the cylinder-seal idea in later, early historic, times cannot altogether be ruled out.

STUART PIGGOTT.

AFRICAN PALAEOLITHIC CULTURES

Some useful information about recent progress in equating the palaeolithic cultures of West, East and South Africa is contained in a précis* of the (unpublished) 6th, 7th and 8th Annual Reports of the South African Bureau of Archaeology covering the period April 1940 to March 1943. The most important conclusions reached are that the Stone Age of the Congo includes a long series of developing industries and material cultures that provide a striking parallel to the development that took place in South Africa during the Earlier Stone Age. Toward the end of the great hand-axe group of cultures however, there is a noticeable divergence or differential development. The Congo Stellenbosch is almost a mirror-image of the Cape Stellenbosch, but the Kalinian

[4] ibid. p. 345 n. for refs. cf. ANTIQUITY, 1943, XVII, 178.

[5] E. Schmidt. *Excavations at Tepe Hissar*, fig. 118.

[6] *Journ. Asiatic Soc. Bengal*, 1842, XI, 316–21; ANTIQUITY, 1927, I, 204–15.

[7] op. cit. 329. [8] ibid. 337. [9] *Cylinder Seals*, 305.

* The Editors are indebted to Professor Gordon Childe for the loan of this précis.

Culture that followed is half-Fauresmith and half-Sangoan—i.e. its affinities with the Uganda counterpart are as marked as they are with the South African expression of what appears to be the same cultural horizon. In these cultures the basic Levallois technique is the same in all three territories, but the principal tool-types vary from the pick in Uganda, to the pick and hand-axe in the Congo and the hand-axe and cleaver in the Union. The Kalinian of the Congo is followed by mid-palaeolithic industries that include Stillbay elements integrally associated with an identically developed Levallois technique, but the principal tool-types differ so markedly that an independent set of terms is required to describe the cultural horizons they and their successors represent. Dr Cabu's well-documented collections show that there is no culture such as the Tumbian as hitherto understood. Both the Abbé Breuil and the Director have submitted their views on Dr Cabu's collections to the Royal Society of South Africa for publication in the Transactions of the Society. These, it is hoped, will appear in due course.

THE BRITISH MUSEUM

Mr Grimes' reference to the administration of the British Museum, in his article on ' Museums and the Future ' (ANTIQUITY, March 1944, p. 46), shows a misapprehension of the facts which it is desirable to remove. It is true that the Board of Trustees includes high officers of Church and State, and representatives of the families of the donors of certain important collections ; but it also includes fifteen elected members, chosen on account of their interest in and knowledge of the matters with which the Museum has to deal. Further (and still more important) the actual administration is delegated to a Standing Committee, composed mainly of the elected Trustees, together with a few of the *ex-officio* Trustees who have taken an active interest in the affairs of the Museum. The result is that the Museum has a governing body fully capable of controlling the Director, while sufficiently versed in the conduct of affairs not to want to interfere in minor details ; and the fact that it has an independent governing body composed of persons of weight and experience gives it an authority which it would not have if it were controlled by a Government department. There was a striking example of the value of this independence during the last war, when the War Cabinet decided to hand over the Museum to the Air Ministry. A Cabinet Minister would not have been able to resist the decision of his colleagues ; but the Trustees were able to appeal to the public, and so obtain a reversal of the decision. The present system is very far from being ' indefensible '; indeed it gives the Museum the best governing body of any institution with which I am acquainted. It should not be rashly subverted without a knowledge of the facts and of its actual working.

FREDERIC KENYON.

EGYPTIAN BRONZE-MAKING AGAIN.

In ANTIQUITY, XVII, pp. 96–8 I published an Egyptian picture showing the manufacture of bronze by the advanced method of mixing and *melting* together the ready-made metals of copper and tin. This is a great improvement on the mere *smelting* of a mixture of the two ores, whether a chance one provided by nature or even a purposeful one made in the workshop. It was also shown that this step forward had already been taken by some time during the 200 years between 1580 and 1370 B.C.

It is now possible to limit the date somewhat more closely, for another scene showing this technique is to be found in the tomb of Rekhmirê, also at Thebes, and this was painted about 1450 B.C. Therefore the period during which the art of mixing and

fusing together the two metals had been discovered must now be shortened by at least 80 years, for the method was already in use by this date. In fact it was probably in use by 1500 B.C., for a still earlier tomb-painting shows the same furnace as the other two and the casters pouring molten metal into a mould as in Rekhmirê. But, though the metal would undoubtedly have been bronze, there is unfortunately nothing to indicate it, nor yet the method by which it had been made (1). We are never likely to limit still more closely the period within which this advance in the Levantine technique had been made, for there are hardly any paintings of the eighteenth dynasty earlier than this.

Rekhmirê's scene is one of casting a pair of doors for the temple of Amûn at Thebes (2). Such doors are of bronze, and the scene shows the necessary ingots being brought to the furnace. First comes a man carrying one which its shape with hollow sides shows to be of copper (3). Behind him come two men carrying baskets of small cakes of something. These must be ingots of tin seeing that they accompany the copper ingot in a bronze casting scene.

The inscription over the men carrying the ingots makes use of the expression ' Asiatic copper ' which was discussed, and shown to mean ' bronze ' on p. 96 of the earlier article in ANTIQUITY. It says ' Bringing Asiatic copper which his Majesty carried off in victory from the hill country of Syria, in order to cast a pair of doors for the shrine of Amûn in Karnak, the pavement of which is overlaid with gold in the likeness of the horizon of heaven, by the Governor of Thebes and Vizier [Rekhmirê] '.

In view of what was said in the article mentioned as to the probability of bronze having come to Egypt originally from Byblos (Gebeil) on the Syrian coast, it is interesting to note that the copper and tin ingots which are about to be made into bronze are called ' Asiatic copper ', and that they were ' carried off in victory from the hill-country of Syria '.

Though the evidence comes from Egypt, it is not to be supposed that the forward step was taken there. No doubt it was taken at Byblos (Gebeil) where the natural mixture of ores occurred. There man had the chance of getting to know the tin ore, then mixing it with the copper ore, and so producing a bronze though of an uncertain percentage of tin. Having come to know the second ore, the local metallurgists were able to experiment with it, smelt it, and finally win the metal therefrom. This could then be used with ready-made copper in whatever proportion might be desired. This would enable the manufacture of bronze to be kept under control, whereas until such time it had been a more or less uncertain affair of chance. ' That time ' was evidently the sixteenth century B.C., or something between that and 2350 B.C., by which time the ability to smelt tin had been acquired on the north of the Mediterranean, as has been shown in another communication (pp. 57–64). It begins to look as if the metallurgists of Byblos had not acquired the art of smelting their tin for themselves, but had learned it from the north. In view of what is said in the article about the early mining of tin in Greece (p. 59) it would be interesting to know whether the metallurgists of Byblos had followed up their rivers, the Feidar and Ibrahim, to the source whence the tin ore

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[1] N. de G. Davies, *The Tomb of Puyemrê at Thebes*, I, pls. XXIII, XXV, and p. 73. Puyemrê lived under Queen Hatshepsut and into the opening years of Tethmosy III's reign (cf. pp. 21, 25), so that his scene would have been painted not later than 1500 B.C.

[2] The whole scene, including the casting operation and the fusing of the metals in the furnace, is being published by the present writer in *Man*. It has often been published before, notably by P. E. Newberry, *The Life of Rekhmara*, pl. XVIII.

[3] For the evidence for this see Wainwright in ANTIQUITY, XVII, p. 97, note 7, or in the article in a forthcoming number of *Man*.

was derived (4). In such a way they could easily have been led on from washing for the ore to mining it. It is to be hoped that the district, Kesrwan, will be searched for signs of early mining, which would probably consist of trenches left by the quarrying away of outcrops. If such trenches should be found, it is also to be hoped that they would contain relics by which to date them. G. A. WAINWRIGHT.

EUROPEAN ARCHAEOLOGY

It is felt by many archaeologists that a Conference on European Archaeology during the summer would be welcome. Many distinguished foreign archaeologists are at present in this country, and their presence makes it possible to arrange a meeting at which a general picture could be presented of the position and needs of archaeological research in Europe. An informal committee met to consider the matter, and unanimously agreed that such a Conference would be useful. The aim would be to deal with general problems which affect large regions, and not with those of particular countries, since problems of archaeology are not confined by national frontiers. Stress would be laid on the subjects in which there is the need for collaboration between archaeologists of different countries, subjects for instance in which general progress is held up since it has not attracted attention recently in a particular country. From this general survey would emerge incidentally the needs of individual countries, particularly those created by war conditions.

The Institute of Archaeology has therefore been asked to organise an informal and unofficial Conference on the Problems and Prospects of European Archaeology to be held on Saturday, 19 August, at 2.30 p.m., and on Sunday, 20 August, at 11 a.m. The Conference will be open to all interested in the subject. The admission fee will be 6*s* for the whole course, or 2*s* 6*d* for the Saturday Sessions and 4*s* for the Sunday Sessions. The Programme of the Conference will be issued in due course. Those interested are asked to notify the Secretary, Institute of Archaeology, Inner Circle, Regent's Park, N.W. 1, that they will like to receive the programme. Applications to attend the Conference may then be made. KATHLEEN M. KENYON.

Acting Director, Institute of Archaeology.

[4] Wainwright in *The Journal of Egyptian Archaeology*, XX, pp. 29–32.

Reviews

THE PERSONALITY OF BRITAIN. *By* Sir Cyril Fox. 1943, *4th edition.* 5*s.*

When *The Personality of Britain* first appeared in 1932 it gave quite a shock to geographers, startling some into noise and motion, rousing others from apathetic acceptance of neglect. This essay by Sir Cyril Fox, indeed, might be described as the focus of a minor earthquake, corresponding to the number 6 on the Rossi-Forel Scale :— ' General awakening of those asleep. General ringing of bells . . . some startled persons leave their dwellings '. Why did the bells ring ? Because there appeared, from the pen of a non-geographer, a geographical interpretation of the prehistory of Britain. Historians, to be sure, had always allowed that in so far as contiguity and distance in the horizontal plane were geographical facts, geography was relevant to history. But here was an archaeologist of repute going the whole way, accepting the geographers' major thesis, namely that human settlement, migration, land use, transport, economic and social life, can only be understood in relation to the whole geographical sequence : position, shape, size, structure, relief, drainage, climate, soils, vegetation and the rest. True that a lead had early been given by Mr O. G. S. Crawford, but he is *sui generis.*

In a second direction *The Personality of Britain* had an importance greater than its modest size and format would suggest. It demonstrated outside geographical circles that the distribution map is not merely a convenient method of factual illustration, but may be a fruitful instrument of research through the relationships which the pattern upon it suggests. How freakish does the run of Roman Roads about York appear until we plot it on the geological map !

If is of course almost inevitable that where a specialist in one field makes wide use of work done in quite another, he lays himself open to the charge of over-simplification, of naïveté, even of error. Some such faults a geographer might find here, and many such he has himself made when venturing into the historico-geographical field. Timid and sensitive spirits are often frightened by loud-voiced critics from these marchland or border studies, but Sir Cyril Fox knows his own strength. He hints, however, at a fifth edition, and a reassessment of certain values and judgments, and so we may perhaps suggest some minor readjustments. The sketch-maps (see cover) taken from the margin of a larger map on a simple conic projection need re-centring. A rainfall map for a single year (unless chosen to represent extremes) is of less value than a map of average conditions. The descriptions of past climates as e.g. ' warm ' are so vague as to be almost meaningless, a fault due, of course, to the Scandinavian writers cited, while the young student needs a stronger hint of some of the difficulties surrounding the subject of climatic change. Isaac Taylor's *Words and Places* should not be cited for Viking settlements, and the term ' damp ' oak-forest gives rise to misconceptions. Finally, if the author would persuade his colleague, Dr North, to provide him with a lithological (not geological) sketch-map of Britain to serve as an under-print, a most illuminating study would certainly prove still more revealing of that ' inter-relatedness of things ', which the late Sir Arthur Thompson described as the core of scientific enquiry.

Prehistorians are perhaps complaining that they have been told nothing about the new edition under review. It is no mere reprint, but has been brought up to date both factually and as regards the invaluable footnote references to source-material and texts. Certain maps have been withdrawn and others added, including one on the Bronze Age in Wales by Miss Chitty. At five shillings the book is a marvel of cheapness, for which we have, no doubt, to thank the University of Wales. E. G. R. Taylor.

EXCAVATIONS AT GIZA. *By* SELIM HASSAN. Vol. I, *Oxford University Press*, 1932. *pp.* 118 *and* 81 *plates.* £1. Vol. II, *Government Press, Cairo*, 1936. *pp.* 225 *and* 83 *plates.* £E3.00. Vol. III, *Government Press, Cairo*, 1941. *pp.* 292 *and* 71 *plates.* £E3.750. Vol. IV, *Government Press, Cairo*, 1943. *pp.* 218 *and* 57 *plates.* £E3.00.

Although their publication has already extended over eleven years these volumes have not been previously noticed in ANTIQUITY, and it is well to summarize the contents of the first three volumes before reviewing the fourth.

Volume I is largely concerned with the great tomb of Re'-Wer, near the granite valley-temple of Khafre by the Sphinx, but accounts are also given of excavations in 13 mastabas.

Volumes II and III describe the excavation of a further series of mastabas, and the third also contains valuable indices to the Old Kingdom titles, personal names, and divine names mentioned in the first three volumes. This feature is of special interest as it provides a cross-section of the social and religious organization of the period. All three volumes are well illustrated photographically and many of the line-drawings are good, but some of the latter are capable of considerable improvement, e.g. those on pp. 2, 8, 15, 42, 139 and 151 of vol. III. In the majority of instances there is no clear statement as to the Dynasty to which the various mastabas belong, but perhaps this information may be forthcoming in volumes to be issued later.

Volume IV is archaeologically much more important than its predecessors. It is concerned with :—

(i) the tomb-complex of Queen Khent-Kawes ;
(ii) an account of the Washing Tent and House of Embalming ;
(iii) a series of mastabas and rock-tombs ;
(iv) indices to Old Kingdom titles.

The tomb-complex of Queen Khent-Kawes is of considerable importance and Selim Hassan considers that she reigned in her own right probably after Shepseskaf (end of Dyn. IV) and before Userkaf (beginning of Dyn. V). Although Mr Hassan describes her tomb as a pyramid he has demonstrated clearly that it was constructed in the shape of an Old Kingdom sarcophagus and had a large flattish top, the whole structure resembling the tomb of Shepseskaf known as the Mastabet el Faroun at Saqqâra. We are therefore confronted with two monarchs who did not have *Re* in their names and did not build pyramids, and Mr Hassan infers that these two monarchs did not identify themselves with the Heliopolitan doctrine of sun-worship and therefore did not build pyramids, which appear to have been solar symbols as well as tombs. He has given many reasons in support of this view which may well be correct. He considers however that Queen Khent-Kawes may have compromised between the doctrine of Ka with the sarcophagus, and that of Re with the pyramid.

In view of the archaeological importance of the site, certain omissions and inaccuracies are particularly regrettable. At the beginning of the book are two plans of the Khent-Kawes complex both on approximately the same scale ; yet one is stated to be 1 : 600 and the other 1 : 200. Moreover, in one of these plans (Fig. 1), that of ' The Pyramid Complex of Queen Khent-Kawes ', the valley-temple of Menkaire is included in a misleading way. In the other, it is shaded as if it had been excavated by Mr Hassan in 1932–3, and one can hardly believe that he re-excavated the valley-temple of Menkaire after the masterly work done on the site by the late Dr G. A. Reisner and published in his *Mycerinus* (1931). Adequate plans and sections of the internal passages and chambers of the tomb of Khent-Kawes are also lacking.

A large part of the volume (pp. 69–102) is devoted to an account of the Washing Tent and House of Embalming, based on Mr B. Ardseloff's *Das Agyptische Reinigungszelt* (Cairo, 1941) with modifications and additions. The essence of this account, in so far as it is concerned with royal tomb-complexes, is that the Washing Tent was a temporary structure situated in or near the valley-temple, and the House of Embalming was a permanent structure in the mortuary-temple of the pyramid or other royal tomb. In support of this contention Mr Hassan draws attention to groups of post-holes which may have contained the supports of the Washing Tents in and near the valley-temples, and stone basins with drainage channels leading from them which may be the remains of the House of Embalming in the mortuary-temples. This is perhaps the most important part of the book.

The remainder of the work (pp. 103–218) deals with the clearing and excavation of some private tombs including the rock-cut mastaba of Debehen, the well-known inscription in which records the assistance given by King Menkaire in the building of the tomb. The holding of a native ceremony in this tomb every Friday morning has caused it to be infested with vermin, as the reviewer noted to his cost during a visit one Friday afternoon. Mr Hassan is to be congratulated on having had the courage to examine this tomb. The work concludes with indices to Old Kingdom titles, divine names, personal names, and place-names.

The quality of the half-tone reproductions in vol. IV is very poor, but doubtless due partly to war conditions.

These volumes are certainly indispensable to all those who are interested in the Memphite necropolis on the Giza plateau, which as once stated by Flinders Petrie, may well claim to be the most remarkable piece of ground in the world L. V. GRINSELL.

SIR ARTHUR EVANS (*pp.* 36, 3*s*); JAMES GEORGE FRAZER (*pp.* 17, 2*s*); SIR GEORGE MACDONALD (*pp.* 21, 2*s*); SIR FLINDERS PETRIE (*pp.* 19, 3*s*). Published, from the *Proceedings of the British Academy* (vols. XXVII and XXVIII), as pamphlets with separate pagination, by Humphrey Milford.

With the passing of these four great men there are left few if any survivors of the age of the pioneers. All were born well before the middle of the Victorian period, and their work was tinged in varying degrees with a kind of almost religious fervour that seems lacking in the work of their predecessors of the eighteenth and early nineteenth centuries. Two of them (Evans and Petrie) were temperamentally rebels whose loyalty to their own genius was the guiding light of their lives. Taken as a whole their life's work has immeasurably widened the content of culture. In evidence of this is the curious fact that no one word is adequate to describe all four. We may call them scholars or men of learning, and that they most certainly were; but they were more. By their work they and others have extended the connotation of the word 'scholar'. Originally this meant one who was taught in a school and so became the pupil or disciple of a particular master. Then it came to be applied to any 'learned or erudite person, especially one who is learned in the classical languages and their literature' (N.E.D.); and today we use the epithet 'scholarly' to describe literary work that conforms to high standards of accuracy and thoroughness. But the greatness of three of these four men consisted not primarily in their book-learning but in their use and improvement of a new tool for the advancement of knowledge—the spade. Petrie revolutionized excavation and transformed it from treasure-hunting into a technique for reconstructing history. Evans used this new technique to recover a lost civilization. Macdonald (with his friend and collaborator

Haverfield) applied these methods to the study of Roman Britain, which before them had been the playground of dilettanti. Frazer reinterpreted the rites and beliefs of religion by comparing them with those of widely different peoples and periods; his facts were obtained at second hand and his chief tool was a pair of scissors. But his work would not have been possible without the field-work of anthropologists familiar at first hand with the customs and beliefs of primitive communities; so that, although himself a scholar in the narrower sense, he belongs by his use of non-literary evidence to the same group as the other three.

The essential achievement common to these men was an enlargement of the content of culture. Today, their principal achievements should be known by all educated persons. 'Crete' should evoke in all such some image, however insubstantial, of a European civilization before the Greeks. 'Egypt' should suggest the origin and revolutions of civilization. 'Folklore' should be associated as much with the Old Testament and some modern practices as with tales of the village. And it should be unnecessary to have to explain the difference between the Roman Conquest and the Saxon invasions, and which came first. This great expansion of knowledge has been achieved not from books but by the practice of certain technical arts in accordance with the methods of science. If one says that the days of 'pure' scholarship are past, one does not mean that scholarship is no longer necessary, but that cognizance must also be taken, both by scholars and pupils, of results obtained by 'non-scholarly' techniques. That is recognized, of course, by the best scholars; modern history-books, for instance, incorporate such results. But it is symptomatic of a certain time-lag in the general recognition of this development that, of these four men, the only one to whom the Order of Merit was awarded should have been the one whose methods were most 'bookish' and abstract. To state this is not to detract from the greatness of Frazer's achievement. Even if he did not himself draw revolutionary inferences, he made it possible for others to do so, by widening their outlook. But we must not end on a note of comparison. The whole world is richer for the lives of all these men. Nor is their life's work ended by death; for it is being carried on by their disciples.

By publishing these short biographies the British Academy is not only honouring the memory of pioneers but also contributing to the history of research, which no student can afford to ignore. O.G.S.C.

THE FIVE ATTIC TRIBES AFTER KLEISTHENES. *By* W. KENDRICK PRITCHETT. *Baltimore*, 1943. *pp.* 39.

This dissertation, submitted for the degree of Doctor of Philosophy in the Johns Hopkins University, is a detailed study of the composition of the five Attic tribes after Kleisthenes. Only the last two chapters, dealing with the tribes Attalis and Hadrianis, are unpublished material. The bulk of the work is a reprint of papers published in the *A.J.P.*, under the titles 'The composition of the Tribes Antigonis and Demetrias' (1940), and 'The Tribe Ptolemais' (1942). As a result of the excavations in the Athenian Agora the author is able to ascribe new demes to certain of these tribes and the evidence for previous identification is reviewed. The demes of the several tribes are set out in tables based on those of v. Schoeffer in Pauly-Wissowa (s.v. Δῆμοι) and Dinsmoor in 'The Archons of Athens', with many additions for which evidence is now available. The tables give the name of the deme, its original tribal affiliation and its trittys location, followed by the references to the evidence for its assignment and its probable representation in the Boule, as far as it is known. The determination of the

date of the creation of the tribe Ptolemais leads the author to discuss some of the intricate questions raised by the researches of Ferguson, Dinsmoor and others on the Archon lists, and to challenge some of Dinsmoor's conclusions. The many students of these chronological problems will be grateful to Dr Pritchett for this convenient collection and painstaking study of the epigraphical material relating to these tribes. G.F.F.

THE THREE AGES : an essay on archaeological method. *By* GLYN DANIEL. *Cambridge*, 1943. *pp.* 60. *3s 6d.*

It is a good thing to study the history of one's own subject, for apart from its intrinsic interest, some knowledge of it is both essential to progress and practically useful. This book is a criticism of Thomsen's classification of prehistory into Stone, Bronze and Iron Ages ; to which are added some remarks about later classifications. When reading it one is reminded of that ' unity of theory and practice ' which distinguishes genuine scientific research from such blind alleys as theology and astrology. Thomsen's theory was forced upon him by the practical need of arranging a large collection of objects in his museum ; the hard facts—and flint implements are pretty hard —evoked the theory. It is a pity that the same word has to be used for those other theories—so genetically different—which spring fully grown from the heads of the ignorant.

Thomsen's work was revolutionary ; it was the first attempt to work backwards from observed facts to the history that they could reveal, instead of trying to fit those facts into some pre-existing, or imagined, historical framework. It thus unlocked the posterngate of a fortress long held by the vested interests of literature and religion. Henceforward archaeology could advance under its own power. The latest classification, based upon methods of food-production, has to a large extent superseded the older ones ; but that is only because fuller knowledge of the past has since been achieved. Thomsen's Ages were a close approximation and correct within certain limits. We still speak of the Bronze and Iron Ages. But we tend to think in terms of food-gathering and agriculture, especially when we are painting on a large canvas.

Perhaps one day Mr Daniel will give us another glimpse into the past, in a subject that he is making his own. It might be called ' The Rise and Fall of the Dolmen '.

O.G.S.C.

GEOLOGY FOR EVERYMAN. *By* the late SIR ALBERT SEWARD. *Cambridge Univ. Press*, 1943. *pp.* VIII, 312 ; 10 *illus.* 10*s* 6*d.*

Sir Albert Seward's chief aim in writing this book is stated to have been ' to present a case for the inclusion of geology as part of general culture '. We need not now discuss the factors which make it necessary, here and now, for a case to be presented ; but rather the extent to which the author has succeeded. Perhaps, also, a word should be said to excuse the reviewing of the book at all in a journal which is chiefly concerned with man and his works. The excuse is that some knowledge of the history of life on the earth is really essential if one is to understand aright the early stages of human history.

The book is attractively written and is particularly good when the author is dealing with what he had made his own subject—the plants of the earlier geological ages. But it suffers, in the reviewer's opinion, from the fact that it works backwards from the present to the past. This method of treatment was adopted of set purpose, and on paper, as an attempt to proceed from the known and familiar to the unknown and remote, there seems to be a good case for it. But in practice we do not think the attempt is

successful. It is like trying to write history backwards. Actually it is not practicable, and the natural order has had to be followed in many of the sections, starting from the beginning of the period in question. In writing a book like this the prime difficulty is to make the reader realize two things ; the vast extent of time and the tremendous results which, given this almost unlimited scope, are produced by the slow operation of simple natural processes such as erosion and deposition. Until this crux has been faced and overcome by an effort of the imagination the geological past is meaningless or unintelligible ; but once it *has* been overcome, then everything else is relatively simple and easy to understand. The archaeologist constantly meets this difficulty. The ordinary educated person often has no conception of time ; after lecturing on the submerged forests of some ten thousand years ago or thereabouts, he is asked a question about the date of coal-formation, as if the two were in the same chronological plane ; yet they differ as much as does the cost of a small farm from that of the whole war for a month.

It goes without saying that the author's presentation of the outlines of geological history is authoritative and correct. Minor points of criticism do not affect the general excellence of the story thus presented. The sarsen stones of Wiltshire are so called because they were attributed to the Saracens, and the derivation given (p. 144) is incorrect (see N.E.D.). And is it true that sarsens have *never* been found *in situ*? Have they not been so found in Essex ? There was no ' arm of the sea ' up the Wiltshire Avon ' close to Stonehenge ', though it is possible, but quite unproven, that the foreign stones might have been floated up the Avon on a raft. Bembridge is not 2 miles southwest of Cowes (p. 138) ; probably the reference intended is to an outcrop of Bembridge limestone at Gurnard ledge. The statements on p. 158 relative to the antiquity of man in East Anglia are, to say the least, disputable, and the flint implements found below the Red Crag are certainly not ' generally believed to be the work of man '. The hypothesis of ' sudden creation ' (p. 255) surely hardly deserves mention nowadays as an alternative to evolution. The fundamental importance of the northwest Highland region deserves a larger sectional diagram than the minute and almost illegible one ($2\frac{5}{8}$ by $\frac{1}{2}$ inch) on p. 270. In geology as in archaeology, the visual is as important as the verbal method of imparting knowledge.

But these few flaws do not impair the work as a whole, and with the qualification already given we commend it to all readers of ANTIQUITY who wish for a pleasant and well-written introduction to a fascinating subject. O.G.S.C.

RECENT ADVANCES IN AMERICAN ARCHAEOLOGY. *Proc. American Philosophical Society*, LXXXVI, 1943, *pp.* I–III, 205–327.

What follows is not a review of the above-mentioned work, which the writer has not seen. Under present conditions not only is it difficult to obtain books for review from overseas, but when received it is difficult to find competent reviewers. That is quite natural, but it is not a valid reason for not recording the publication of books which readers of ANTIQUITY might otherwise miss. These notes are based upon a full summary of the articles in the *Proceedings*, which occupies pp. 345–52 of the *American Journal of Archaeology* (vol. XLVII, July–September, 1943).

The origin of the Eskimo is discussed by Henry B. Collins. Their ' cultural ancestry ' is traced to certain Mesolithic-neolithic artifacts in the region of Lake Baikal in Siberia, but intervening links in both time and space are still missing. In what must evidently be a most important contribution Frank C. Hibben describes the discovery of a pre-Folsom culture called Sandian, after a cave near Bernalillo in New Mexico. This is the first stratigraphical evidence of this older (Sandian) culture, which is characterized

by ' crudely chipped points ', very different from the finely flaked Folsom points in the layer above it. ' The associated mammal remains are of bison, horse, camel, mammoth and mastodon '. This would seem to place the Sandian well within the Pleistocene period. John C. McGregor describes an unusually rich burial, probably of a magician, in a small masonry house at Ridge Ruin, near Flagstaff, Arizona. About 600 grave-objects were found, some suggestive of Hopi ceremonies that have ceased only recently. The date is within the first quarter of the 12th century A.D.

Recent excavations in New York have brought to light evidence of a post-Lamoka culture probably related to the ' Red Paint ' culture of Maine and containing remains of brachycephalic individuals. ' It was pre-sedentary and probably Palaeo-Algonkin '.

The Abbott farm claims have been disproved by the excavation of 700,000 cubic feet of sandy gravel and humus. There were no glacial or pre-glacial artifacts.

In Middle America the Aztec civilization is limited to the period A.D. 1300–1520. It was preceded by at least four cultures, about the first two of which, comprising the original hunting and gathering groups, we have no data.

In Peru the Inca culture was preceded by three others described as ' Early local ', ' Tiahuanaco middle ' and ' late local '. The widely distributed Chavin culture, characterized by stone sculptures representing ' felines ' in weird and distorted forms, cannot yet be fitted into the scheme.

From all this it would appear that, while the general outline of North American archaeology is beginning to take shape, that of Middle and South America is still incomplete. Not having, as we said before, read the articles themselves but only summaries, we do not know whether certain matters may have been referred to. But we miss a discussion of the origin of metal implements and weapons in the New World : is it known how and when they were introduced ? And was it by means of independent invention or diffusion ? Then again, is there any archaeological or ethnographical evidence connecting South America with Polynesia ? If, as seems probable, stray voyagers from Polynesia did reach the American continent, bringing with them the calabash, and return, taking with them the bread-fruit,* did they leave behind any recognizable cultural mark of their presence ? Perhaps the answer to these questions is known to Americanists; it is not generally known to archaeologists whose work is confined to the Old World.

POLYNESIAN EXPLORERS OF THE PACIFIC. *By* J. E. Weckler. *Smithsonian Institution War Background Studies*, No. 6. *Washington*, 1943. *pp.* 77.

This is an excellent summary of all that is at present known about the peopling of the islands of the mid-Pacific, with some account of their society. The chief routes followed by these migrations can be inferred with tolerable certainty from the evidence of place-names and other words, custom and geography. Polynesian lore points to the land called Hawaiki as that from which their ancestors came and to which (as being also the abode of the gods) the souls of the dead return. The name was constantly used to designate ' important islands in the new archipelagos they discovered in the Pacific ' (p. 5), such as Savai'i in Samoa, Havai'i in the Society Islands and Hawai'i itself. The suffix *-iki* means little, and the word may mean ' Little Java ' and ' be reminiscent of the time when ancestral Polynesians lived in Indonesia, possibly on Java or on some nearby island that was called Java in those days ' (p. 6). The habit of naming new places after the old homeland is a universal one, of which there are many

* See J. E. Weckler, ' Polynesian Explorers of the Pacific '.

examples in this island. Thus the Irish Scots called many places in Scotland by names signifying ' Little Ireland ' ; and names of the type of ' New England ' and ' Nova Scotia ' are common all over the world.

' In physical appearance and mental abilities the Polynesians compare favourably with any people in the world '; and they originally enjoyed a correspondingly fine culture. The story of the destruction of this culture by traders and missionaries cannot be read without feelings of indignation. But it is good to hear that that destruction is still incomplete, and that the Polynesians ' are not likely to change over to the Western (i.e. capitalist) way of thinking in any foreseeable future ' (p. 58). Incidentally they give the lie to those who prate about the innate character of the profit motive by still preferring ' to work in co-operative groups under the leadership of a man of high prestige as they did in aboriginal days ', when they ' had probably the highest standards of leisure in the world '. If they can retain their standards for a little longer they may find themselves in the van of human progress—unless of course ' our way of life ' should be perpetuated.

ARCHAEOLOGICAL SITES OF THE CUCHARA DRAINAGE, SOUTHERN COLORADO. *By* E. B. RENAUD *and* JANET CHATIN. 4th Paper in the Arch. Series of the Dept. of Archaeology, University of Denver. *Denver, Colorado, January*, 1943. 62 *typewritten pages*, 4 *plans*. 75 *cents*.

This is a detailed record of ancient Indian camping-sites, represented by hut-circles and the remains of outlook towers. It is a record of field-work carried out under difficult conditions. As such it is of value and likely to increase in value as time passes and the remains disappear. How valuable would such a record be if it had been made in this island, say, 200 years ago, before the tide of enclosures and industry had swept much of the country clean of all its past ! It is obvious that there is behind this and previous publications both drive and enthusiasm. We could wish that, instead of the plans (which have no scale) vertical air-photographs had been possible. The subject dealt with would give excellent results.

THE YEZIDIS, SULUBBA AND OTHER TRIBES OF IRAQ AND ADJACENT REGIONS. *By* HENRY FIELD *and* J. B. GLUBB. [In same cover as the preceding].

The Yezidis live in the isolated mountain region of Balad Sinjar and the Khabur, with outlying groups, one such (now nearly extinct) being as far distant as Tiflis. They are not Mahommedans but devotees of Melek Taus, the peacock, representing Satan, and their policy is to appease him. Actually their religion would appear to be the residue of a number of primitive cults that elsewhere have been superseded by more up-to-date organizations. It is maintained by a priesthood entirely supported by voluntary contributions of the illiterate, as in early England. Literacy is a jealously guarded privilege of the priesthood. Mr Field performed a useful work by measuring their heads, and has written an interesting account of his short visit.

Mr Glubb writes some notes on the ' ignoble tribes ' of southwest Asia, with whom the Beduin do not intermarry and whom they treat with the utmost contempt. Human nature is not at its best between the Mediterranean and the Indian Ocean. The author rightly rejects the alleged Crusader origin of the Sulubbas, and his account of how they now retail this theory is a warning. When pressed his informants admitted that they had got it from a French officer in Syria ! Thus do ' learned ' theories pass into currency amongst primitive people and emerge later to confirm themselves—a vicious circle that is found also in Britain.

THE JOURNAL OF ROMAN STUDIES, vol. XXXIII, 1943. Parts I and II. *Published by the Society of Roman Studies*, 50 Bedford Square, W.C. 1. *pp.* 126, 8 *plates.*

Whatever share we may assign to individuals in the making of history, there can be no doubt that, in the study of it, the role of outstanding personalities is paramount. The Roman Society, as it is usually called, was founded over thirty years ago by Professor Haverfield, Camden Professor of Ancient History in the University of Oxford; and his influence is still plainly visible in the Society's journal. He himself was a Roman historian who gave order and method to the archaeology of Roman Britain, and founded a school. The present number of the Journal, like its predecessors, maintains a corresponding balance between history and archaeology, and will emerge (we hope) from a second world-war with the same steadfastness of purpose and under the same competent direction as it emerged from the first.

Having received a review copy, it will not, we hope, be resented if we criticize, in an entirely friendly way, the format of the Journal. The review-section is divided into three sections (1) reviews and discussions; (2) reviews; (3) notices of publications. There seems to be little except length to differentiate these contributions; we would suggest that the difference between reviews and notices hardly justifies the drawing of any distinction, while some of the 'reviews and discussions' could well appear as review-articles. It is difficult to see any reason (except economy of space, and the saving must be very slight) for not printing the four 'reviews and discussions' as articles.

The contents do not bear out the contention that a classical education is the best former of style. Some of the articles and reviews are models of composition; others, while doubtless valuable as records, are unreadable. One (on Glevum) is a descriptive list (occupying 14 pages) that should properly form part of a museum catalogue; another opens with a verbless sentence preceded by an arabic numeral; a third, while at least composed with some regard for literary form, is, to me, almost wholly unintelligible. (What, for instance, is meant by the statement on p. 69 that 'worship now has its *raison d'être* in otherness'?) Thirteen pages are devoted to a discussion of details of Roman law and administration. No doubt in such times as these copy is scarce, even in the ample field of classical studies; and I hasten to add that my remarks are in no way directed at the Editor, who has to make the best use of the available material, and has doubtless done so. But in view of the high claims made for the classics, a higher literary standard might well be expected. That even the most technical work can be presented in clear and readable English has been proved by Mr Richmond's account (published elsewhere) of his excavations at Fendoch. *Ars est celare artem* is a saying that the armchair scholar also should remember.

Professor Norman Baynes, in an admirable essay, analyses and rejects various explanations of the cause of the decline of Roman power in Western Europe, concluding that 'culture is essentially a social thing: it is born of intercourse and it needs a *conscious solidarity of interest* [my italics] in order to sustain it . . . The barbarian invasions broke into this area of intercourse' [the Western Empire], 'and destroyed its culture.

Mr Richmond reviews certain recent discoveries in Roman Britain made both on the ground and from the air, and makes some timely remarks upon the limitations of air-photography as an instrument of research. While agreeing with much that he says, I am (perhaps naturally) a little more optimistic than he is of eventually obtaining good results in, for instance, North Britain and Scotland. We shall get them when someone as expert and enthusiastic as the late Major Allen gets to work. We shall not get them from those who will not study the necessary technique. The ground, like the enemy,

must be studied if it is to be mastered. It may be necessary to wait for a suitable crop, or an early morning in March, or a drought. Past failures may be due to failure to discover and utilize the local conditions. What we need is freedom to experiment. I agree that ' heather, bracken and bent ' are formidable opponents, but think they can be overcome by skilful manoeuvring. O.G.S.C.

THE ROAD TO HEL. *By* HILDA R. ELLIS, PH.D. *Cambridge University Press*, 1943. *pp.* 201. 12*s* 6*d.*

The purpose of this book is stated at greater length in the sub-title, ' A Study of the Conception of the Dead in old Norse Literature '. It is a careful and highly documented examination of the evidence, beginning, very rightly, with the evidence which comes from archaeological research. Early times show a general custom of inhumation, at first in common graves, and then in single tombs ; this was supplanted towards the third period by an increasing practice of cremation, which seems to have come in in the southeast and became fairly general ; but with the Viking period inhumation became common again, and cremation stopped at the latest in the 11th century. This in itself suggests the origin of the two theories to which the literature bears evidence, the survival of the dead with Othin in Valhöll, and the life of the dead in the howe, which gave rise to necromancy and the sitting on the howe to get wisdom ; witness to the spread of this custom is given in the late laws of Iceland, which forbid under Christian influence the practice. At the same time throughout the whole period there was yet another method of disposing of the dead, the voyage or ship-burial whether in ship-shaped graves or in the ship itself, a practice which survived till the 7th century, as the Sutton-Hoo discovery, just before the war, showed. It is pointed out that the East was apparently the source of new customs, and the changing into animal shapes which appears in some stories hints at connexion with the Lapps. The worship of the dead, and, as has been said above, enquiry from them in the howe, and the various stories of the way to Hel, some of which read almost as if they were rather imaginative embellishments of journeys into the northern darkness of midwinter than descriptions of a voyage to the infernal regions, are carefully examined ; links are found with Erse and Cymric legends, and with the Niebelungen Lied. The chapter which carries least weight is that on the conception of the soul, which really seems to have had many forms ; and the question of permanent survival is doubtful, since even in the residence with Othin there is the prospect of Ragnarrokr and the conflict with the wolf. Quite apart from the evidence submitted within the book, the persistence of pre-Christian ideas is witnessed by the occurrence on some of the Manx crosses of Othin, Thor, Utgardar-Loki, and the wolf (Fenrir) along with Christian symbols. The enquiry is a valuable and careful study of the subject in the light of the comparatively little light that we possess. M. LINTON-SMITH.